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5 May 1983

WORLDWIDE REPORT

EPIDEMIOLOGY

No. 317

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ARGENTINA

BRIEFS

MENINGITIS CASES IN 1983--La Plata, 16 Mar (TELAM)--Public health officials report that 246 meningitis cases have been registered in the Buenos Aires Province so far this year, compared with 191 cases during the same period in 1982. [Buenos Aires TELAM in Spanish 0105 GMT 17 Mar 83]

CSO: 5400/2070

AUSTRALIA

BRIEFS

NEW MEASLES-MUMPS VACCINE--A COMBINED measles-mumps vaccine will replace the measles vaccine now used in mass immunisation programs. The Federal Minister for Health, Mr Carlton, said the vaccine would be provided free to the States and Territories along with vaccines for use against poliomyelitis, rubella, diphtheria, tetanus and whooping cough. The National Health and Medical Research Council had recommended that the combined measles-mumps vaccine be given to children aged 12 months. [Canberra THE AUSTRALIAN in English 15 Feb 83 p 6]

CSO: 5400/7562

BRIEFS

CHOLERA IN PIROJPUR--About one hundred people died of cholera in Pirojpur subdivision of Barisal district--which had been taken by the disease for the second time in less than four months. The subdivisional officer of Pirojpur confirmed 81 deaths out of 1140 attacked since February 20. He said the municipal area and eight thanas including two upgraded thanas of Banaripara and Mathbaria were the worst affected areas. Forty people died in Pirojpur thana alone including the municipal area, he added. The SDO said the disease was spreading in remote vilages where medical aid could not be sent due to communication problems and inadequate number of doctors. Impure drinking water and rotten fish fare are the main reasons for escalation of the disease, the SDO said. [Dhaka THE NEW NATION in English 8 Mar 83 p 1]

CHOLERA IN BARISAL--BARISAL, Mar 6 (BSS)--One Hundred 58 persons were attacked and seven died of cholera during the last 24 hours in different places of Perojpur the badly cholera affected subdivision in Barisal district, according to District Martial Law Authority. Number of persons attacked with cholera was 617 and number of deaths was 39 during the period from Feb 27 to date in the whole of Barisal district. The worst cholera-hit areas are Perojpur Sadar and Nazirpur police stations. One hundred 25 medical teams in coordination with control room, set up in various places of the district, have been working round the clock in order to combat cholera in the district. [Dhaka THE NEW NATION in English 8 Mar 83 p 2]

CHICKENPOX OUTBREAK--Mar: 9:--Chicken pox has broken out in entire Chittagong Hill Tracts district especially around Kaptai town. Over one hundred persons mostly youngsters have fallen victim to the disease in the region in last few days. According to a Kaptai medical officer Chitmaran, Chandraghona, Bilalchhari and Kaptai proper have been affected by the disease and over 50 persons received treatment in private and government clinics at Kaptai alone. Among the aflected persons, conditions of 12 are known to have been deteriorated as they could not be admitted to the hospital because there was no infectious disease ward. [Dhaka THE NEW NATION in English 10 Mar 83 pp 1, 8]

DISEASES CLAIM 2,600 LIVES--Dhaka, March 18 (BSS)--Cholera and diarrheal diseases have claimed more than 2,600 lives in Bangladesh since last September, official sources told BSS. The sources said 173,382 people from 11 districts were attacked by the disease of which 2,618 died. During the first 3 months of the current calendar year, the death figure stood at 458, the sources said. Health Minister Major General Shamsul Haq who went on a whirlwind tour Thursday of some of the affected areas held talks with the local officials engaged in medical assistance. He called upon the people to strictly maintain general hygienic condition to face the problem. Health Ministry sources said about 500 medical teams with doctors and paramedics are working in the affected areas to combat the disease and adequate medicine have been supplied. [Text] [Dhaka BSS in English 1030 GMT 18 Mar 83 BK]

CSO: 5400/4714

CHAD

BRIEFS

SARH MENINGITIS EPIDEMIC--A meningitis epidemic was reported several days ago in Sarh, where seven have died. Meningitis has also been reported at Lere, where schools have been closed to reduce the risk of communication. The disease could assume alarming proportions. The public is urged to take precautions and particularly to report any cases. /Exceprt/ /Ndjamena INFO- TCHAD in French 21 Feb 83 p 5/ 9920

CSO: 5400/200

BRIEFS

MEASLES EPIDEMIC--A number of children from 6 months to 4 years old have been hospitalized lately at the Comilog [Cie Miniere d'Akouta] hospital. The epidemic, if one is to listen to the nurses consulted, is always more prevalent between November and December and March-April, and is probably caused by malnutrition, among other causes. [Text] [Libreville L'UNION in French 3 Mar 83 p 2] 9895

CSO: 5400/213

GREECE

MEASLES CASES AROUSE EPIDEMIC CONCERNS

Limnos, Aigaleo Cases

Athens I VRADYNI in Greek 31 Mar 83 pp 1, 12

[Excerpts] Great anxiety--reaching the point of panic--has begun to be widespread in Athens due to the measles epidemic, which has already cost the life of two children in Limnos, while others are not yet out of danger.

Already two young brothers who attend Agia Varvara elementary school in Aigaleo were transferred yesterday--according to reports--to the Hospital for Infectious Diseases, with symptoms of a disease which although still undiagnosed resembles the symptoms of infectious bronchopneumonia, one of the complications of measles.

It was learned that at 1400 hours yesterday, and despite the strike of the Olympic Airlines workers, an Olympic Airlines plane of the "Aztec" type took off for Limnos carrying serum to this border island. There are even conjectures that in addition to the serum this airplane very likely was carrying anti-measles vaccine as well.

Crete Cases

Athens ETHNOS in Greek 1 Apr 83 p 3

[Article by Art. Domenikou]

[Excerpts] The new epidemic of measles has surfaced in Crete this time.

In the town of Palaiohora of Selinon in Khania, 22 small children have fallen victim to this infectious disease.

Nevertheless, as the nomarch of Khania confirms, nobody has been transferred to the hospital yet.

Meanwhile, at the infectious diseases hospital a 9-year-old boy is now in a comatose state due to complications from measles.

The boy in question is Petros Kleonatos, a resident of Agia Varvara of Aigaleo, who is suffering from encephalitis.

His younger brother Dikaïos and another 21 children--all victims of measles--are also being treated at the infectious diseases hospital.

These children come from various areas within and outside of Athens, we were informed by the head of the infectious diseases hospital, Levteris Anevlavis, a pulmonary specialist and lecturer at the University of Athens.

Under no circumstances can we talk about an epidemic in any area of Athens, he stressed in answer to a relevant question from the ETHNOS.

According to the data which we were given by Anevlavis, 19 of these children are younger than 14 years old, and only 4 are older. They entered the hospital within the interval between 24 March and 31 March 1983.

The usual number of cases of measles is 5,000-15,000 annually, with deaths numbering 1-5, it was stated yesterday by Minister of Health and Welfare Par. Avgerinos.

He explained that he is referring to cases which are reported to the public-health authorities.

Measles is an infectious disease which would have died out if everybody had become aware of the possibility of vaccinating against it, he observed.

At this moment, the ministry has 37,500 units of vaccine, and another 50,000 units are in customs.

Salonica Encephalitis Case

Athens I KATHIMERINI in Greek 2 Apr 83 p 2

[Excerpts] Salonica--A little girl aged 2 years old who was stricken with measles and is being treated at the Agia Sofia Hospital in Salonica is in danger of losing her life from complications which the disease has produced. The girl in question is Theodora Spanou, who 20 days ago "caught" the measles from her 5-year-old sister and her twin brother.

A week after its appearance the disease produced complications, and Theodora was stricken with encephalitis and a grave form of bronchopneumonia.

It has been confirmed that measles among children has been rising in Salonica recently in comparison with previous years. Most of the cases are being seen in the western sector of Salonica, and above all in the settlements of Menemeni and Kordelion.

Vaccination Sought

Athens I KATHIMERINI in Greek 6 Apr 83 p 2

[Excerpt] The appearance of large numbers of parents seeking to get their children vaccinated against measles was seen yesterday at all the medical centers,

following the announcement by the specialists on the need for vaccinations. At many medical centers there was jostling, and according to phone calls by our readers a shortage of vaccine appeared in places. The result, they complained, was that the vaccinating came to a stop after 12 o'clock noon, even though many parents were still waiting in line with their children.

According to information from the Ministry of Health and Welfare, 700 children were vaccinated yesterday at the Athens Medical Center, with an extra vaccination team being formed to handle them all. In addition, the medical centers at which vaccine has run out were notified that they could procure sufficient quantities this morning from the Public-health Laboratory.

A problem also arose in connection with private doctors, who did not have enough vaccine to be able to serve all their patients, and who also did not allow vaccinations to be given to infants under the age of 1 year, maintaining that children should be vaccinated only from the 15th to the 18th months of age.

All the above things indicate that there was not enough briefing of the doctors, and also that there was a lack of the sort of organization which needed to have taken place before the official announcement was given which caused this mobilizing of the parents.

12114

CSO: 5400/2533

CONFUSION SURROUNDS CHOLERA SITUATION IN SOUTH NYANZA

Nairobi THE NAIROBI TIMES in English 16 Mar 83 p 5

[Article by William Onyango]

[Text]

THE cholera situation in Nyanza is now confusing with politicians quoting certain figures and other sources quoting others while the ministry of health has decided not to disclose the number of deaths.

According to the director of medical services, Dr. W.K. Koinange the confusion has been brought about by people calling all the diagnosis of any diarrhoea case as cholera.

Koinange said for any death samples must be taken for laboratory test before the cause could be pronounced. He however, declined to comment on cholera situation. "No I don't want to talk of that issue now," Koinange told *The Nairobi Times* over the weekend.

According to well-placed sources, however, Koinange last month sent a circular to all doctors in Nyanza warning them to desist from issuing

press statements regarding the cholera situation in Nyanza.

The sources said the only person allowed to talk on cholera situation now was Koinange himself. The decision was taken when on February 24, 1983 the MP for Homa Bay, Mr. Oluoch Kanindo, told a press conference that cholera had killed 20 people in his constituency.

But the ministry, through the permanent secretary, Mr. G. Mwirichia, said that only five deaths had been registered at Homa Bay Hospital since the outbreak of the disease.

In March 7 this year the *Kenya News Agency (KNA)* in a story attributed to the Kisii medical officer of health said that 10 people had died from cholera in that district. The latest report from that area now puts cholera deaths to 14 which would mean 34 people have died of cholera in South Nyanza.

SPORTS ACTIVITIES BANNED FOLLOWING CHOLERA OUTBREAK

Nairobi DAILY NATION in English 18 Mar 83 p 24

[Text]

All sporting activities in South Nyanza District have been banned following an outbreak of cholera.

The order was issued yesterday by the district's basic education officer, Mr J.M. Murage, who sent a circular banning sports meetings to all basic education officers. The ban was ordered after consultation with health authorities, who have directed that all games and physical education competitions be cancelled until further notice. Soccer competitions, were not included as they do not fall under Mr Murage's Ministry. Other public meetings were banned earlier.

Over 20 people in the district, were admitted to Homa Bay District Hospital between Tuesday and Wednesday.

Another circular, copied to the District Commissioner and the provincial medical officer from the district public health officer Mr Naftali Bundi, said that due to sports meetings being held in the district, cholera was being spread. The circular asked chief officers to stop all sporting activities.

In the circular Mr Bundi said that Kendu Bay, Oyugis, Central Migori and Mbita divi-

sions have all been affected by cholera and some schools where sports had been held had reported cholera cases.

The circular added that sports grounds were lacking adequate sanitation facilities and had no clean water. Foodstuffs, such as mandazis and bananas, were sold to children under unhygienic conditions. These were some of the reasons the disease had spread.

"By allowing sports meetings to continue we shall be frustrating our cholera surveillance team's efforts," the circular said.

The *Nation* learnt that some secondary and primary school students had been admitted to Homa Bay hospital. Schools affected are Ogande Girls High School, Nyaganjo Girls School, Gogo and Masangalo Primary schools.

The *Nation* found that some health centres, which had been opened to treat cholera cases, had no cholera drugs. At Rongo Health Centre, the *Nation* learnt that the cholera ward was not operational due to a lack of IV fluid needed by cholera victims. All patients are being referred to Homa Bay and Kisii Hospitals.

CSO: 5400/219

KENYA

BRIEFS

CHOLERA SPREADING IN HOMA BAY--An outbreak of cholera in Homa Bay has now reached alarming proportions, the area MP, Mr Oluoch Kanindo, said. Calling on the Ministry of Health to act fast, Mr Kanindo said the district hospital was one of the causes of the disease because it was "very dirty," its toilets filthy and the kitchen also very dirty. He said some sections of the hospital were not functioning and claimed that hospital funds had been misused. He said drugs should be flown to the area in large quantities. He added that the surveillance teams sent there were not working effectively because they were not being paid overtime. The MP for Karachuonyo, Mrs Phoebe Asiyo, called on Ministry of Health personnel to move from their ivory tower in Afya House and go and see how people are suffering from cholera. She said the killer disease has claimed many lives in Karachuonyo and she asked the Ministry to establish five control and observation centres in the constituency. The MP for Limuru, Mr Jonathan Njenga, said that people in Ndeiya location were suffering from a lack of water and other services. [Text] [Nairobi DAILY NATION in English 23 Mar 83 p 5]

CSO: 5400/211

FIVE PEOPLE BITTEN BY SUSPECTED RABID JACKAL

Blantyre DAILY TIMES in English 18 Mar 83 pp 1, 3

[Text]

FIVE people — including two young children — were bitten by a suspected rabid jackal near Mpemba Staff Training College in Blantyre on Wednesday afternoon.

But five children of the senior technical officer in the veterinary office at Mpemba escaped by locking themselves in a car after the jackal had run onto the khonde of their house.

The jackal was killed and the carcass has been taken to the regional veterinary office for tests. Anyone who may have come in contact with the animal is advised to go to hospital for medical treatment.

The people who were bitten were Mr. Frank Kansonga and Mr. Simbani Kukada, of Josamu Vil-

lage, Mr. Zwawa Malata, of Duncan Village, a young boy and the two-year-old daughter of a watchman at the training college.

The jackal also frightened people in Mtelela Village and chased children at Mpemba primary school and Blantyre Water Board staff members who were working on a pump fault at the veterinary office.

The animal then ran onto the property of the veterinary official, and was about to attack his two-year-old son when the other children picked him up and fled to a nearby car.

The jackal ran into the house but subsequently escaped and tried to attack a blue gum tree before it was killed.

CSO: 5400/222

CHOLERA OUTBREAK REPORTED IN SABAH

Emergency Declared

Kuala Lumpur NEW STRAITS TIMES in English 8 Mar 83 p 2

[Text]

KOTA KINABALU, Mon. — An emergency has been declared in Lahad Datu following an outbreak of cholera which has claimed seven lives.

The town, 93km from here, has been sealed off since 4pm today, with police manning roadblocks at all entry and exit points.

District Officer Mohamed Yaakub Abdul Hamid, who chaired a district committee meeting this afternoon, said 300 people were confirmed to be down with cholera in the past 24 hours, bringing the total number of confirmed cholera cases in the past week to 2,568.

The director of medical services, Dr Michael Chan, said the epidemic which struck the town about a month ago, was only today confirmed as cholera.

It was first thought to be diarrhoea but tests on water samples from the Sepagaya River showed it was cholera, he added.

The tests followed the admission of 74 people with severe vomiting and diarrhoea to the Lahad Datu General Hospital last night.

More than 300 others, mostly from squatter areas on the river banks, began having the same complaint, Dr Chan said.

The town, with a population of 54,000, has been hit by a drought and people have had to resort to river water.

Both the Sepagaya and Matamba rivers have been declared cholera infected.

Dr Chan said steps had been taken to distribute antibiotics to the people, while chlorine is also being added to the Sepagaya River.

"We cannot stop people from using river water since there is nothing else but we are telling them to boil it first," said Dr Chan.

Senior police officers, including OCCI Supt Othman Dahwan, have rushed to Lahad Datu to supervise the quarantine.

A police spokesman said visitors to the town were being turned back at the road blocks.

All flights in and out of Lahad Datu that were allowed in the afternoon have been cancelled as of this evening. The last flight left at 5.30pm.

Total of 250 Cases

Kuala Lumpur NEW STRAITS TIMES in English 14 Mar 83 p 2

[Text]

KOTA KINABALU, Sun. — A total of 153 cases cholera with four deaths were reported from eight districts in Sabah during the past week.

Sabah Medical Services Director Dr Mechiel K.C. Chan said this brings the total number of cholera cases since the beginning of the year to 250.

He said Lahad Datu had 104 cases with one death; Tawau, 34 cases with three deaths; Semporna, six; Sandakan, five; and Kunak, Kota Kinabalu, Labuk Sugut and Tenom, one each.

The number of kampungs affected by cholera in Lahad Datu was 38; Tawau, 15; Semporna, three; Sandakan, five; and Kunak, Kota Kinabalu, Labuk Sugut and Tenom one each.

Dr Chan said that

earlier reported deaths from Lahad Datu were not confirmed as due to cholera.

Samples

Ten carriers were detected this week — eight from Tawau and one each from Kota Kinabalu and Labuan.

A total of 1,137 rectal swabs, 13 food samples and 106 water samples were taken for analysis by public health teams.

Three river water samples from Sungai Pancuran and Sungai Sepagaya of Lahad

Datu and Sungai Kalabakan of Tawau were found to be positive.

The samples from the Lahad Datu rivers were taken on Feb. 28.

Samples taken on Friday showed that Sungai Pancuran was negative for cholera virus while those from Sungai Sepagaya were still positive.

The public have been urged not to use the water from Sungai Sepagaya, Lahad Datu and Sungai Kalabakan, Tawau for purposes of drinking, washing or bathing.

They have also been reminded of the im-

portance of observing strict personal hygiene.

In KOTA BAHARU, 16 people have been stricken by cholera and warded at the General Hospital there since Feb. 24. One of them, a pregnant woman, Satinah binti Wahab, 27, died last week.

Disclosing this today, acting Director of Health and Medical Services Dr Gurbakh Singh said that several of those warded have been discharged.

The cholera victims came from Tumpat, Tanah Merah, and Pasir Mas districts.

Dr Gurbakh said yesterday the Medical and Health Department had directed their officials to put disinfectants into the wells from which the people in the affected places draw water for daily use.

CSO: 5400/8422

MALAYSIA

BRIEFS

CHOLERA CASES IN SABAH--Another 97 cases of cholera were discovered in Sabah during the past week. This brings the total number of cases to 826 since the outbreak of the disease early this year. Four deaths were reported during the week. These details were given by the state medical services director in Kota Kinabalu. So far there were 15 deaths. [Kuala Lumpur Domestic Service in English 1130 GMT 16 Apr 83 BK]

CSO: 5400/4407

NORTHERN INDIANS SUFFER TUBERCULOSIS, OTHER RESPIRATORY AILMENTS

Mexico City EXCELSIOR in Spanish 25 Feb 83 p 31-A

[Article by Manuel Cabrera]

[Text] Eighty percent of the 50,000 Indians from the northern plateau are tubercular or suffer from respiratory diseases from lack of medical help.

The director of the Center of Regional Studies of the Autonomous University of Chihuahua, Fructuoso Irigoyen, asserted that these illnesses are the principal causes of death among the Guarojios, Pimas, Tenehuanes and Tarahumaras.

He pointed out that the indigenous inhabitants of the northern plateau are exploited by industrial groups, such as Ponderosa of Chihuahua, Celulosa of Chihuahua and Pameles who treat them inhumanly, because in addition to forcing them to work from dawn to dusk, they do not provide any medical service.

The leader of the group "Land and Liberty," Abraham Zigala announced that in some regions such as Tatahuchi, Celocahui, Ejido "El Arbol," they are exploited by the Vallina family, principal owners of the wood companies who pay Indians 10 pesos per ton of cut wood.

Zigala declared that the assistance programs of Social Security have been a disaster in the towns of Tarahumara, as nobody can make the Indians give up their charms and potions.

Fructuoso Irigoyen indicates in studies undertaken that in spite of presidential resolutions decreed by the federal government on the non-allocation of lands, the resolutions have not been carried out or enforced for the benefit of the Tarahumaras, and those lands continue to be exploited by private persons.

The president of the Supreme Tarahumara Council, Samuel Diaz said that unsanitary conditions reign in the Tarahumara tribes, and that therefore large numbers of "raramuris" have emigrated to the cities, which is a pity, rather than continue to be victims of the intermediaries in the commercialization of their crops.

He said that their own crops, native to the mountain area, provide the Indian a precarious livelihood, because, apart from being ignorant of vegetable and

garden produce, their equally valuable products are carried off by voracious intermediaries.

Manuel Luna Verduzco, director of Forest Products of Tarahumara, indicated that one of the most important problems of the mountain people of Chihuahua is the lack of communication but the biggest problem is nutrition.

9678

CSO: 5400/2062

BRIEFS

ANTIPOLIO CAMPAIGN--Tomorrow, health sector institutions, SSA [Secretariat of Health and Assistance], ISSSTE [Institute of Social Security and Services for Government Workers], IMSS [Mexican Social Security Institute, DIF [System for Complete Family Development], will begin a national antipolio vaccination campaign which will end Friday, the 25th. Accordingly, these organizations together issued a call yesterday for all children from 2 months to 3 years old to receive the Sabin oral vaccine, it being of no importance if they have already received it, since it can be taken several times without causing any harm; in fact it creates a reinforcement. Vaccination will be undertaken in all health centers, clinics of the Secretariat of Health, DIF, ISSSTE and Social Security. Based on instructions from heads of those institutions, coverage will be widened to undertake house to house immunization with the aim of having its benefits reach children who live in small, rural, isolated or distant communities. [Excerpts] [Mexico City EXCELSIOR in Spanish 20 Feb 83 p 5-A] 9678

POLIO CASE STATISTICS--The production of antipolio vaccine constitutes in our country a technological and scientific triumph. Dr Julio de Mucha, professor on the faculty of medicine of UNAM [National University of Mexico] asserted that in the past year there were only 70 cases of poliomyelitis, and who also determined that hence the interest of the Institute for Biomedical Research, where various virological projects are developed. [Excerpts] [Mexico City EXCELSIOR in Spanish 14 Feb 83 p 17-A] 9678

CSO: 5400/2062

MOZAMBIQUE

BRIEFS

CHOLERA CASES, DEATHS REPORTED--In the first 3 months of this year the cholera outbreak affected seven provinces of the country, with the greatest number of incidents in Gaza Province. A source in the epidemiology section of the National Directorate of Preventive Medicine said yesterday that the number of cases registered in the affected provinces reached a total of about 7,000, and that there were only 250 deaths. The same source added that in the southern provinces, which have been the most affected, the outbreak is decreasing. [Text] [MB081210 Maputo Domestic Service in Portuguese 0800 GMT 8 Apr 83]

CSO: 5400/216

BRIEFS

BABIES IMMUNIZED--About 20,000 babies were immunised against tetanus, polio, tuberculosis and whooping cough in the Ondo Local Government area of Ondo State last year, an official of the Ministry of Health, Mrs Fola Osundolire, said. Speaking at a party held for babies, Mrs Osundolire expressed satisfaction with mothers in the area for responding to advice given to them by health officials, and appealed to them to attend clinics regularly. [Text] [Kano SUNDAY TRIUMPH in English 20 Feb 83 p 3]

CHICKEN POX, MEASLES, GASTROENTERITIS--An outbreak of chicken pox, measles and gastroenteritis has been reported in Obiocha Ohaozara Local Government Area. The affected areas are Okpoma-Onicha, Uburu and Umudomi-Onicha. The disease was disclosed by the chairman of Obiocha Ohaozara Local Government Caretaker Committee, Mr Ogbonnaya Akuma when he addressed health officials at Obiocha Ohaozara on how to combat the diseases before any harm could be done to the people. According to the chairman, no death has so far been reported as a team of health officials have been drafted to the affected areas to halt further spread of the diseases. [Rich Nmaram] [Text] [Enugu DAILY STAR in English 9 Mar 83 p 3]

CSO: 5400/184

PLAN TO TRAIN X-RAY TECHNICIANS

Karachi DAWN in English 4 Apr 83 p 5

[Text]

ISLAMABAD, April 3: A comprehensive training programme for X-rays technicians in the country will soon be introduced to impart to them knowledge about the latest techniques, being used in the modern world.

Informed sources on Saturday told "Dawn" that all qualified, as well as those willing to join hospitals as X-rays technicians, will have to qualify this training programme before entering the profession.

Academic qualification, plus aptitude test and other requirements for the candidates, will be determined by a high level committee, to be formed soon by the Federal Health Ministry, in consulta-

tion with provincial governments.

The selected candidates will be awarded licence to be considered as a necessary document required for employment. The license will also be necessary for those technicians serving in private clinics.

It is reported that the radiation (of X-rays), which was injurious to health, required special precautionary techniques of handling. The Government has, therefore, decided to appropriately train the working technicians to enable them to perform their task more effectively.

Most of the X-rays technicians, it is reported, are not fully aware of the new techniques being used in the West.

CSO: 5400/4717

BRIEFS

DOCTORS' FEES--Islamabad, March 13--The Federal Health Ministry is giving serious thoughts to regulate the fees of private medical practitioners by dividing their clinics into three categories, it is reliably learnt here today. A high powered committee in consultation with Provincial Governments will be set up very soon to determine future direction in this regard. The proposed committee, it is reported, will check the facilities available in the private clinics to determine if the amount being charged by the doctors for treatment was a fair one. The Ministry in this connection has evolved a formula categorising the clinics as 'A', 'B', 'C', to determine the maximum limit of fee to be charged by private doctors. The rising trend of charging exorbitant fees from patients has prompted the health high-ups to find out if the treatment given by the private doctors was satisfactory. The Ministry will also ensure if private clinics which had fixed the name plates of noted specialists were providing the services of the same doctors. It is reported that some private clinics failed to provide the patients with the service of the doctors whose names appear on the clinic signboards. [Article by Mujtaba Akhter] [Text] [Karachi DAWN in English 14 Mar 83 p 1]

ACADEMY IN FINAL STAGES--Faisalabad, March 11--The Federal Health Minister Dr Nasseruddin Jomezai said the plan for the establishment of Medical Academy on the same pattern as the Civil Academy was in the final stages. Talking to APP, he said, the Government was actively considering to set up the academy for doctors so that they could become fully acquainted with the administration and other official routine. This academy would start within a month or so after the final approval of the President Gen Mohammad Zia-ul-Haq. Regarding the entry test in the First Year of MBBS, he said, this system would very likely be enforced from the next year. A high-level meeting of Federal and Provincial Health Secretaries and the principals of all medical colleges would be held at Islamabad to consider the proposal already with the Health Ministry, he said. Replying to another question, the Federal Health Minister said that all resources have been diverted towards the welfare of the rural population, and majority of the funds for health sector have been allocated to Rural Health Programme, he added. The Rural Health centres and subcentres at tehsil level would be provided with qualified doctors and para-medical staff. [Text] [Karachi DAWN in English 12 Mar 83 p 12]

PUNJAB'S HEALTH CENTERS--Multan, March 12--The Punjab Minister for Education and Health, Mr Hamid Nasir Chattha, has said that all the rural health centres in province will be converted into 20-bed hospitals during the next five-year period. This was stated by the Minister during his visit to various basic health centres in surrounding villages on Thursday. He was accompanied by the Acting Chairman of District Council, Multan, Nawab Liaquat Ali Khan, and some officers of Education and Health Departments. The Minister further said that the staff residential accommodations will be constructed adjacent to the existing basic health centres. Mr Chatta also inspected some schools near Mutan and advised the teaching staff to provide all facilities to the students and perform their duties sincerely and honestly. He instructed the education authorities to prepare scheme for purchase of necessary equipments for Science laboratories in village schools. Earlier the Minister distributed prizes among the winners and runners-up of the annual athletics meet at Nishtar Medical College. Speaking on the occasion, he assured that in order to solve the residential problems of the medical students the construction of second portion of the Iqbal Hostel will soon be started. He said that the sanction for provision of necessary equipments for operation theatre, including close-circuit TV has already been given. Besides a 120 kw generator will soon be provided. Moreover, he added, that modern machinery will also be provided soon for facility of the heart patients. [Text] [Karachi DAWN in English 13 Mar 83 p 7]

CSO: 5400/4714

GUANGDONG PUBLIC HEALTH CONFERENCE CONCLUDES

HK010343 Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT
31 Mar 83

[Summary] A provincial public health work conference concluded yesterday after 6 days in session. The meeting focused on questions of reforming the public health departments. It pointed out that the following tasks should be undertaken: change the method of paying out bonuses averaged among everyone, and pay bonuses on merit; the public health setup under collective ownership in urban and rural areas must break down the state monopoly method and practice independent accounting with sole responsibility for profit or loss, distributed according to work, and democratic management; hospital directors and responsible persons of sections should be elected by the masses and approved by the organization; the medical and public health departments must experiment in taking the grassroots sections as the basic accounting units, with contracted work tasks and revenue and spending plans; the floating wage system can be tried; speed up the work of examining and approving the applications of individuals to practice medicine; individuals are allowed to practice, operate hospitals and clinics, run pharmacies and function as itinerant doctors; a few famous old doctors and specialists of Chinese medicine can have apprentices at their own expense; retired doctors are allowed to treat patients in their homes or at their original units, and receive a certain degree of remuneration for this; surplus nontechnical personnel in medical and public health units can stop working there for a time to find other jobs for themselves; the production brigade medical centers should mainly promote contracted responsibilities for barefoot and village doctors; the methods of using state subsidies for public health units should be reformed; the medical fee system should be reformed; public health legislation and its enforcement should be strengthened; and pilot projects in comprehensive reform of the rural public health system should be organized.

During the meeting provincial CPC committee First Secretary Ren Zhongyi met provincial public health department director (Zhang Qin) and various specially invited participants and listened to their reports. He also gave instructions on reform work. Vice Governor Yang Kanghua spoke at the meeting.

CSO: 5400/4130

BRIEFS

DEHYDRATION AFFECTS CHILDREN--Thirty children become dehydrated daily in Lima. So far this year, a daily average of 20 to 30 cases of acute dehydration in children has been recorded and 260 cases of children in the preliminary stage of this disease have been treated on an outpatient basis. This was reported by Wilfred Gamarra, consultant in the administrative department of the Childrens' Hospital. He said that, compared with January of this year, dehydration cases have remained stationary but that, compared with previous years, the record has been broken. He added that each day many mothers take their children, who are afflicted with diarrhea, vomiting, and high fever, symptoms of this disease, to an outpatient department. They are re-hydrated in the outpatient doctor's office through administration of hydration salts by means of droppers and they return to their homes the same day. On the other hand, when the cases are very acute and children have lost a great deal of liquid, they must remain in the emergency room, where they are administered serum with potassium salts for their recovery. Dr Gamarra said that when dehydration is very advanced it can be fatal. He therefore appealed to all parents to avoid giving their children the ice cream, "marcianitos," snow cones, and soft drinks that are sold on the streets without any safeguards. He added that many of these products are made with water from conduits and that they contain a great many bacteria and germs that cause diarrhea in children. [Text] [Lima EL COMERCIO in Spanish 27 Mar 83 p 8] 8255

MALNUTRITION, TUBERCULOSIS INCIDENCE LINKED--The incidence of tuberculosis has increased in Peru as a result of malnutrition. The incidence is serious, in spite of a lower mortality rate from this disease. Notwithstanding this, the number of sick persons has increased, owing to crowding and to malnutrition, especially in the big cities like Lima, said Dr Jose Estrada yesterday. He is president of the Scientific Department of Regional Council III of the Medical College of Lima. There will be a symposium on the various forms of tuberculosis, including meningitis, urointestinal, skin, and lung, to take place on Thursday, the 24th, at the Medical College of Lima, at 1900 hours. Dr Estrada said that the aim of the meeting is to further instruct doctors on this subject and also to urge the state and the people to pay attention to this great problem. [Text] [Lima LA PRENSA in Spanish 24 Mar 83 p 7] 8255

PARASITOSIS IN EMERGING TOWNS--Ninety percent of the children in the emerging towns of Lima are suffering from parasitosis, owing to a lack of drinking water and proper drainage, reported Gladys Donoso, laboratory clinician in the Guillermo Almenara Irigoyen National Hospital (formerly, Obrero). She said that this disease lowers mental capacity and causes cases of anemia in the children of the population, who live in crowded conditions without basic hygienic facilities. [Excerpt] [Lima LA PRENSA in Spanish 27 Mar 83 p 8] 8255

CSO: 5400/2065

SCHISTOSOMIASIS CONTROL MEASURES TAKEN

Manila BULLETIN TODAY in English 17 Mar 83 p 24

[Text]

The World Bank has agreed to extend a P45-million loan to the government to provide some 750,000 toilet bowls made of fiber glass to depressed barangays and other areas infested with schistosomiasis.

The proper disposal of wastes is expected to eliminate the source of infection and consequently decrease the incidence of schistosomiasis, or snail fever, a disease caused by a blood worm transmitted by a tiny freshwater snail.

Health Minister Jesus Azurin said yesterday the incidence of schistosomiasis has remained in the same level in the past few years.

Schistosomiasis is characterized by abdominal pains, low grade fever, loose bowel movement, and dysentery in the early stages and inflammation of the liver, enlargement of the spleen, bulging of the abdomen, and emaciation in the later stage.

The World Food Program (WFP) will

provide two kilos of rice for 10 Sundays as incentive to heads of families to put up the toilet bowls.

The WFP reportedly will trade imported wheat for rice at the National Food Authority for distribution.

Azurin said that schistosomiasis control will be strengthened with the use of Praziquantel, an effective, less toxic drug.

He said agro-engineering measures and the application of molluscicides as terminal measures were reported to be very expensive in snail control.

In a report of the MOH schistosomiasis control and research service, 46,257 hectares of land in 141 towns in 22 provinces are infected with fresh water snails, afflicting an estimated 700,000 persons.

These are Mindoro, Sorsogon, Bohol, Leyte, Samar, Zamboanga, Misamis, Lanao, Agusan, Bukidnon, Surigao, Cotabato, Davao, and Sultan Kudarat.

BRIEFS

UNIDENTIFIED INTESTINAL DISEASE--DAVAO DEL NORTE, March 29--An outbreak of an unknown intestinal disease has claimed the lives of seven persons, including three children, in sitio Dasing, in Barangay Misaoy, in new Corilla town, this province, during the weekend. Local health authorities here only identified two of the children with their surnames, as Urbito, 4, and Paimalan, 8. Two of the adult victims were identified as Lilia Sinayon, 30, and Carmen, Kagat, 40. Mrs. Circumsicion Ulit, public health nurse, said unsanitary water supply in sitio Dasing might have caused the outbreak of the disease. [Manila BULLETIN TODAY in English 30 Mar 83 p 28]

MEASLES REPORTED ON RISE--The Ministry of Health (MOH) urged yesterday the public to have children between nine to 14 months old immunized against measles to avert a possible outbreak of a measles epidemic. Over the past few weeks, the total number of hospital admissions due to measles increased at the San Lazaro hospital. The MOH disease intelligence center of the MOH reported that cases of measles increased to 211 last week from the previous week's 203 cases. The number of measles patients exceeded the five-year median of 186 cases during the same period. It was reported that of the total number of hospital admission, 195 were from Metro Manila while 16 were from the neighboring provinces. Dr. Jaime Lagahid, a medical specialist of the MOH Maternal and Child Health division, said that the incidence of measles, an airborne disease, is expected to increase during summer months. Measles is one of the most common viral diseases in the country especially affecting children. The disease is almost confined to infants and children with 61.4 of cases and 88.5 per cent of deaths in the under five years age group. It was also reported that the highest morbidity rate was among those under one year, with a rate of 287.2 per 100,000 population. [Manila BULLETIN TODAY in English 19 Mar 83 pp 1, 11]

CSO: 5400/4397

BRIEFS

TYPHOID IN NEWCASTLE--PIETERMARITZBURG--Thirty cases of typhoid have been reported in Newcastle in the last month with two deaths, and the incidence of outbreaks is expected to increase. The medical superintendent of Madadeni hospital, Dr S Smith, said the hospital had admitted 53 cases of the disease since the beginning of January, a sharp increase over the average. There have been two deaths from typhoid. Dr Smith said on Thursday there were usually only three or four cases a month. "Because of the water shortage, hygiene standards have dropped and the disease is one of the results of a low state of hygiene." Typhoid is contracted by eating food which has been contaminated with the disease by flies, or by handling with infected hands. A critical water shortage would affect hygiene because water was saved for drinking and not for washing, he said. Typhoid had an incubation period of 12 to 16 days, he said. Once it broke out it affected the whole body, finally settling in the intestines. [Text] [Johannesburg THE CITIZEN in English 9 Apr 83 p 10]

MEASLES DEATHS--Port Elizabeth--One hundred Black and Coloured children in Port Elizabeth have died of measles in the past three months--almost double the number of deaths for the whole of last year, health authorities said yesterday. The situation is expected to deteriorate with the onset of winter. Since the beginning of January, 94 Black and six Coloured children have died from the disease, 46 of them last month. No Whites or Indians have died of measles this year. The Medical Officer of Health for Port Elizabeth, Dr J N Sher, attributed the present upswing in the incidence of measles to the susceptibility of the masses at the moment, the slum conditions which tended to aggravate the disease, and the toxicity of the virus. Measles are rarely a killer. People die of the complications which set in as a result of measles, such as pneumonia, gastroenteritis, encephalitis and tracheo-bronchitis.--Sapa. [Text] [Johannesburg THE CITIZEN in English 12 Apr 83 p 11]

SUSPECTED CHOLERA CASES--About 90 cases of suspected cholera were admitted to the Church of Scotland Hospital at Tugela Ferry at the weekend. A hospital spokesman said yesterday that the big increase in the number of patients was probably caused by the heavy rains in the area last week. He said tribesmen were so pleased with the rain after months of drought that they used the water without boiling it. [Text] [Johannesburg THE CITIZEN in English 8 Mar 83 p 14]

DAR ES SALAAM CHOLERA DEATHS, CONTROL MEASURES

Dar es Salaam DAILY NEWS in English 5 Mar 83 p 3

[Article by Jonas Mwasumbi]

[Excerpt]

THREE people have died from cholera since the disease broke out in Dar es Salaam on February 5, this year, the City Medical Officer Dr. P. Mtey has disclosed.

Dr. Mtey said apart from the deceased, a total of 61 cholera victims were treated and discharged at different periods while nine others were still hospitalised.

Among the nine patients, six are at Muhimbili Medical Centre and three at the Ilala district hospital in the city, he said.

Commenting on efforts being made to eradicate the disease, Dr. Mtey said it was currently difficult for cholera and other diarrhoeal diseases to vanish totally in Dar es Salaam.

He observed that the outbreak of cholera in many parts in the country, it was "impossible for Dar es Salaam to play it safe" as there was a constant influx of people.

He attributed the recent outbreak in the city to 16 fishermen from Pemba who before coming to Dar es Salaam had made a camp at Mapinga village in Bagamoyo district where one cholera victim died.

Dr. Mtey reiterated the call to city residents to report promptly to hospital all cases of sudden profuse diarrhoea and vomiting.

He also reminded the public to maintain personal and environmental hygiene as the prerequisite factor against the disease.

CSO: 5400/199

TANZANIA

BRIEFS

ZANZIBAR CHOLERA DEATHS--Two persons have died of cholera and 21 others have been hospitalized at the V.I. Lenin Hospital in Zanzibar. According to a Radio Tanzania Zanzibar bulletin yesterday, the deceased died on Zanzibar Island. The first one died before arrival at the hospital while the second died on reaching the Lenin Hospital. The radio, quoting the Ministry of Health which announced the outbreak of the disease in the Isles, said that four persons who had contracted the disease have been admitted to the V.I. Lenin Hospital and 17 others were at Kojani island in Pemba. A special centre has been established at Kojani to treat the victim, the radio pointed out. The radio said the first cases of cholera were spotted at Tumbatu island in Zanzibar North and Magamba, also in Zanzibar North, on March 23. Other victims have been spotted in Mkokotoni, Kinyasini, Donge, Mfenesini and Jang'ombe in Zanzibar town. [Excerpt] [Dar es Salaam DAILY NEWS in English 31 Mar 83 p 3]

IRINGA CHOLERA DEATH--One person died of cholera in Idodi, Iringa, over the weekend. A spokesman of the Iringa District Medical Officer's Office, said this brings the cholera death toll to six since the outbreak of the disease last month. He said three people are being treated at Iringa regional hospital. [Text] [Dar es Salaam DAILY NEWS in English 8 Mar 83 p 3]

CSO: 5400/199

FISH, LIZARDS CALLED EFFECTIVE AGAINST MOSQUITOS

Bangkok DAO SIAM in Thai 15 Feb 83 pp 3, 10

[Article: "Way Found to Eradicate Mosquitos Without Using Pesticides; Lizards Are Very Effective"]

[Text] Concerning the results of the research conducted in 10 provinces by Dr Siriwat Wongsiri of the Biology Department, Faculty of Science, Chulalongkorn University, on controlling mosquitos without the use of pesticides -- results that were recently published in the journal CHULA WICHA -- it was found that 14 types of insects and 20 types of animals such as lizards, geckos, toads, frogs and fish eat the mosquito larvae of various types of mosquitos found in Thailand, such as anopheles, culex and "ram khan." In particular, some types of surface fish such as mosquito-eating fish are the fish that are the most efficient in eating mosquito larvae. Besides this, it was learned that "nin" and "kherm" fish are very efficient at consuming the larvae of anopheles that feed and breed on the surface.

At present, chemicals or pesticides are used to control or eradicate mosquitos in Thailand. For this reason, the problem that has arisen is pollution of the environment with the pesticides. And the mosquitos have built up a resistance to the pesticides. Scientists are trying other control and eradication methods, including biological methods. If this succeeds, it will be possible to control mosquitos in the long term, and this will save money since the amount of pesticides used will be reduced.

Biological control and eradication methods refers to using living creatures as parasites, or hunters, and micro-organisms to destroy the living creatures that we desire to get rid of, in this case mosquitos, which are an important insect from the medical standpoint.

Concerning the results of the research, it was found that lizards are a very good natural enemy that eat full-grown mosquitos that rest on walls after taking in people's blood. And concerning hunter insects in various water sources, from surveying the breeding grounds of mosquitos, it was learned that, in general, if the young of waterfall dragonflies,

"khem" dragonflies and house dragonflies and water bugs such as "muon won" and "muan maeng da suan" are present, there will be few mosquito larve in these water sources.

Besides this, "nin" fish, which are a popular food item among villagers, [can be used effectively]. If "nin" fish are released into the breeding grounds of anopheles mosquitos at a time when the "nin" fish are still small, they will eat the mosquito larve. And then when the "nin" fish grow larger, they can serve as food for the villagers.

Thus, if these biological control methods succeed, it will help reduce the use of toxic chemicals, which will also help solve the environmental pollution problem. This will also help save tens of millions of baht every year that have been spent on purchasing pesticides to eradicate mosquitos, an important pest from the medical standpoint.

11943

CSO: 5400/4382

THAILAND

BRIEFS

CHOLERA KILLS 3 VILLAGERS--Nakhon Ratchasima--Three villagers have died from cholera and more than 250 people have contracted the disease which has spread to eight districts in this northeastern province, a public health officer said yesterday. Dr Paichit Pawabutre said there had been 254 cases of cholera since the beginning of the year but the fatal cases were reported in recent weeks. The affected areas were in the districts of Sikhiu, Non Thai, Chakkarat, Chok Chai, Pak Chong, Muang, Phimai and Pak Thong Chai. Dr Paichit said public health authorities are confident that further outbreaks of the disease can be controlled. Public Health Minister Dr Sem Pringpuangkaew said that since the beginning of this year there have been 300 reported cases of cholera. [Text] [Bangkok BANGKOK POST in English 29 Mar 83 p 5]

CSO: 5400/4401

BRIEFS

ADDITIONAL MALARIA DRUGS--Medical authorities on the Copperbelt have ordered more malaria drugs to cope with an outbreak of the disease in most parts of the province, provincial medical officer, Dr Vinayak Gannu said yesterday. Dr Gannu said although all hospitals and clinics had enough malaria drugs to treat patients, drugs to enable his men embark on a preventive programme were not enough. "This is why we ordered more malaria drugs from Medical Stores so that we can carry out both curative and preventive programmes to bring the disease under control," Dr Gannu explained. Dr Gannu said although he could not give figures of malaria patients admitted to clinics and hospitals this year, there was a general increase in the number of malaria cases reported to various medical institutions. "We don't know when the drugs we ordered to enable us embark on a preventive programme will be sent to us but I hope the consignment will be dispatched soon," Dr Gannu said. He appealed to Copperbelt residents to remain calm because all available resources had been mobilised to deal with the situation. "There is no cause for alarm. We have enough drugs to treat cases reported to us and we also have enough medical personnel," Dr Gannu added. [Text] [Lusaka DAILY MAIL in English 29 Mar 83 p 3]

CSO: 5400/218

CHILDREN LEAD WAR TO WIPE OUT BILHARZIA

Harare THE HERALD in English 9 Mar 83 p 7

[Article by Davison Maruziva]

[Text] **COMMUNITY participation in controlling bilharzia is the key factor in reducing its prevalence in Zimbabwe.**

This is the view of Dr Sam Tswana of the Department of Medical Microbiology at the University of Zimbabwe's Faculty of Medicine, who is working in Chiweshe communal land on an experiment designed to eliminate bilharzia.

He said in an interview at the weekend that four-fifths of people of school-going age in Mashonaland suffered from bilharzia because they lacked the necessary education to prevent transmission of the organism.

"People suffer from bilharzia or are affected because they do not know the rules. They need an intensive educational programme to be able to play their part in its destruction.

"Several people might have heard about bilharzia, but they are not educated enough about it to prevent transmission of the organism."

The first full survey of bilharzia infection in the country, by Dr Paul Taylor of the Blair Research Laboratory, shows that four in every five people suffer from bilharzia.

Dr Tswana said that Dr Taylor's survey had shown the prevalence of bilharzia to be higher than was thought. Schoolchildren are among the bilharzia victims and his (Dr Tswana's) study has

revealed that 87 percent of the schoolchildren at Kanhukamwe Primary School in Chiweshe have bilharzia.

About 70 percent of the children at the school, Dr Tswana said, had blood in their urine.

They were infected as they came into contact with water at the school's garden pool which has bilharzia (sercaria) host snails.

Since the experiment began last August, the children have been put on treatment, but more significantly, a new well for the school garden is near completion and a scheme to rid the pool of snails has begun.

The chairman of the Department of Medical Microbiology at the University of Zimbabwe, Mr Nigel Lyons, agreed that

the schoolchildren should be the target group of the experiment being done in Chiweshe. "That is ideal."

He also felt that the provision of a well at the school was the right move in eliminating bilharzia infection among the schoolchildren.

"It is alright educating somebody, but the important thing is that you must provide them with some other means and, until that is done, the educational programme is not of real value. Certainly the boiling of water is an important feature.

"A programme of eradication of bilharzia must be well balanced because it is not sufficient to tell the people that they must not go into potential infected water if they have no alternative available to them," Mr Lyons said.

Zimbabwe's bilharzia patients had not developed resistant strains and with the development of more efficient drugs free of side effects, patients will begin to complete their treatments.

Only one drug in the country was known to have side effects, but efforts to develop acceptable drugs were still being explored.

Very little, Mr Lyons said, had been done in the way of education for the prevention and eradication of bilharzia. However,

several projects were lined up for such a programme.

Dr Tswana's scheme involves the destruction of the vegetation at the pool and persuading pupils to refrain from contaminating water in the area.

"In my scheme, I started with one school because I was able to monitor the progress of my work and, if this experiment works, it will be introduced to other areas," Dr Tswana said.

A bilharzia blitz programme in Brazil had involved communities, but the Zimbabwe experiment

sought to involve the children. The children, it was hoped, would then introduce the bilharzia prevention concepts to their families.

One of the simpler methods being taught to the pupils is the boiling of drinking water from bilharzia - infested, water points. Alternatively, they are being advised that the water can be left in the sun for up to eight hours.

Dr Tswana said the main objectives of his study were to assess the value of an educational programme in the prevention of re-infection in bilharzia endemic areas.

The other was to determine whether involvement of school-children in the removal of vector snails would significantly reduce the number of infecting snails.

The Chiweshe programme will continue for some time and the results would not be seen until the end of the year (1983).

Dr Tswana, who does not favour the use of chemicals in eradicating bilharzia, said more emphasis should be put on letting the people with the problem know what bilharzia is and should be involved in handling the problem.

CSO: 5400/197

ZIMBABWE

BRIEFS

CHOLERA DEATHS REPORTED--Harare, 15 Apr (AFP)--At least six people have died of cholera in Zimbabwe, a reliable source here said today. The development follows current epidemics in the neighbour states of Mozambique and South Africa. The six, two of them Mozambican, died in the Sengwe region near the Mozambican and South African borders. The Zimbabwean Health Minister Oliver Munyaradzi today visited the Sengwe region, which has been put in quarantine, the source said. The cholera wave is partly due to a lack of running water as a result of serious drought affecting southern Africa. [AB151747 Paris AFP in English 1714 GMT 15 Apr 83 AB]

CSO: 5400/223

DISEASE KILLS FOALS IN AUSTRALIA

Christchurch THE PRESS in English 19 Mar 83 p 23

[Text]

NZPA Melbourne
A disease not found before in Australia had killed a number of foals in five Victorian studs, the Victorian Department of Agriculture said yesterday.
A department scientist, who detected the disease, said that in each case other foals at the studs had been infected, but recovered with treatment.
The scientist, Dr Saul Tzpori, of Attwood Veterinary Research Institute, Westmeadows, described the disease as severe bacterial infection of the gut.
Four of the studs were in central Victoria and one in the Geelong region, he said.
"The cases have been reported on well managed studs, but I don't know how many more cases are likely to be around.
"We're hoping others might now contact us so we can gather more information.
"I'm cautious about attaching any significance to

the disease possibly being on a wider scale at this stage. But next foaling season will tell," he said.

The foals were infected within 40 to 60 hours of birth.

Dr Tzpori said he knew of only one similar case elsewhere — in Canada.

Two suspected cases occurred in the United States, but they could not be confirmed because the organism could not be identified. He said the same type of thing had been found in pigs in the United States.

The disease affecting foals was generally fatal unless quickly treated by a veterinarian.

Dr Tzpori said the disease was caused by bacteria of a similar type to bacteria that caused tetanus, pulpy kidney and blackleg. The bacteria could live in the soil.

The department had first learnt of the disease in 1981, when one case of an infected foal was reported.

CSO: 5400/4404

MINISTER REPORTS ON SPREAD OF RINDERPEST, INTERNATIONAL AID

Ndjamena INFO-TCHAD in French 5 Mar 83 pp 1-4

/Text/ ATP--Two months after the introduction of rinderpest into Chad, the Department of Livestock is still ready for action. The damage has been partially limited, but the quarantine line between Guelendeng and Bousso has been breached, and the pest is threatening the Sudan area. The frequent interruptions in the supply of vaccine, which is significantly under stocked, are the main obstacle hindering this campaign, for which all the forces of the nation are mobilized. International solidarity has played a considerable role in the struggle being waged by the government against the rinderpest. The minister of livestock and water, in a report to the cabinet, gave a realistic review of the development of the situation. We print the text for you:

The first cases of rinderpest were identified in areas along the Sudanese border. The sickness then spread in an east-west direction from Adre to Ndjamena. From there it branched southeast and northwest to cover the entire territory.

The southern area was the last to be affected. There have been several cases, and they continue to be reported. The measures taken at the beginning of the campaign by the Coordination Office, to isolate this area by establishing a quarantine line from Kyabe to Guelendeng, through Bousso, were unable to operate correctly because of lack of resources. The frightened cattleraisers moved up their migration schedule and moved earlier than usual to the Sudan area, spreading the disease with them.

Throughout the prefectures of Batha, Ouaddai, Biltine and Chari-Baguirmi, the situation seems to have more or less stabilized. The original areas of concentration have been eliminated, or are in the process of being so. The Coordination Office estimates a mortality rate of 3 to 5 percent of total livestock in these prefectures. However, the pest was particularly lethal in some areas with a very high rate of about 80 percent. Although the situation has stabilized in these localities as a whole, we are still very concerned about some areas which are points toward which livestock are attracted or where large concentrations of animals have been observed. The view of the frequent interruptions in vaccine supply, these concentrations of animals constitute a favorable environment for the occurrence of epidemic disease of all kinds.

The campaign to combat the rinderpest, which was begun after 10 January 1983 with almost total lack of resources, has extended over the entire territory and mobilized all the country's active population. It is this general mobilization that has made the campaign possible even in the least accessible areas. The assistance from businessmen and the availability of the administrative and military organizations has made it possible for the Livestock Service to use its resources judiciously, for these resources are inadequate everywhere. Remembering the terrible epidemics of rinderpest in the 1960's, the livestock owners have responded positively to the vaccination by coming long distances to bring their animals to the vaccination teams.

However, the bottleneck to an effective campaign is still the shortage of vaccine. The campaign started with 1 million doses planned for another, much more localized project. A second million doses arrived a week later. These 2 million doses made it possible to get the campaign underway, and in particular to gain control of the situation in certain areas. To replace the vaccine, we made a request to the French Cooperation Mission, which diverts funds intended for other projects and orders from the Institute for Livestock and Veterinary Medicine for Tropical Countries (IEMVT), which serves as the intermediary with the laboratories producing vaccine (Dakar and Addis Ababa). This considerably complicates the delivery route and explains the difficulties in regularly supplying the centers and the frequent shortage of vaccine stock. These shortages cause the stock owners to be constantly on the move, either going on to another center that is better supplied with vaccine, or seeking refuge in still unaffected areas. These frequent disruptions have been a major factor in the spreading of the disease.

After an initial deficiency of more than 15 days at some centers, the third million doses arrived on Monday 14 February 1983 and was rapidly distributed throughout the country. However, many are running out a second time. Many centers have begun sending in new, urgent requests for vaccine. In light of this dramatic situation, the Coordination Office sees no other solution but to resort to an old vaccination process. It involves using capriplague vaccine, which is obtained by vaccinating goats with a colony of vaccine virus, and 3 days later the spleen is removed, ground up, and after filtration the liquid can be used as vaccine. It should be noted that this process has some disadvantages because it sometimes produces some unfortunate vaccine effects. This method will be the last resort if all other channels fail.

The vaccination distribution of the first 2 million doses was as follows:

Geographic Ouaddai	316,970
Batha	596,000
Chari-Baguirmi	344,270
Guera	78,200
Moussoro	148,816
Salamat	87,000
Total	1,581,258 <u>/figures as published/</u>

These figures are less than the real total because many centers have not yet sent in their reports.

The Response of the International Community

Our appeal on 11 January 1983 for the international community to come to the aid of the Chad Government in facing the rinderpest produced an active interest among a considerable number of representatives of international organizations. There was considerable reaction, but concrete assistance was slow in coming. We have been diverting the resources for other projects, which as a result are presently stalled.

We are seeking ways and means to restore the funding for these projects.

The status of announced aid is as follows:

--The Association for Promoting Horse Stock in Chad (AEARCT) contributed through its chairman 50 barrels of fuel.

--Under the urgent assistance budget of the Lome II Convention, a request for a total of 70 million was submitted to the commission of the EEC in Brussels. The latest information is that Chad has used up its allocation for urgent assistance.

--The FAO has granted aid totaling U.S.\$296,000, or about 103,6 million CFA francs.

It is planned to send a foreign veterinary as part of this aid package. Orders for vaccine, veterinary supplies, and logistical material have already been submitted through Rome. That organization has a lengthy administrative process.

--The UNSO and UNDP are jointly contributing U.S. \$280,000, or about 98 million CFA francs. The official document has already been signed.

9920

CSO: 5400/200

DETAILS ON RESEARCH TO FIND CURE FOR ECF GIVEN

Nairobi DAILY NATION in English 25 Mar 83 p 6

[Article by Peter Ngunjiri]

[Text]

East Coast Fever (ECF) is a tick-borne disease, cattle farmers most dread. It is the number one cattle killer; according to the Livestock Development Ministry, it claims up to 70,000 cattle in Kenya each year.

But recently, the Livestock Development Minister, Mr Paul Ngei, announced that a cure for the disease had been discovered and that the drug should be in the market soon.

This information sent ripples through the entire farming community in Kenya. Farmers are keen to know when the drug would be available.

Mr Ngei had not disclosed much about the new drug. He had only said that work on developing the drug had been done by Kenyan and British scientists. Neither the name of the drug, nor the company that had developed it were given.

The *Nation*, however, managed to trace the people who discovered it, and get their story.

It took the scientists 26 years to discover the wonder drug that is expected to save hundreds of animals.

The whole exercise was done by a locally-based pharmaceutical company, Wellcome Kenya Limited, along with the Kenya Agricultural Research Institute's Veterinary Research department at Muguga.

At Wellcome Kenya Limited, the research team was headed by Dr Gedion Mulela. On British, the project leader was Dr David Morgan, who was backed by Dr Alan Hudson and Dr Nick McHardy.

The Muguga team was led by the director of the veterinary section Dr Walter Masiga, and included members of the protozoology division — Doctors Alan Young, Tom Dolan, A. Linyonyi, S. Mbogo and Messrs B.L. Leitch and D. Stagg.

A cure for ECF has been sought since 1903, but practical efforts to get one started only in 1957, when the Wellcome centre was put up at Kabete, near Nairobi. Dr Jack Wilde was the man that started it all.

Ticks

His method was to infect cattle by attaching ticks on their ears and treat them with drugs thought might work. He used all drugs available at that time, but none was good enough to treat the dreaded disease.

In 1967, it was found to be too expensive and work was stopped. But Dr Wilde's work was not in vain. In the 10 years, he had learnt a lot about the disease. This helped in later years.

By the time Wellcome stopped their research, new efforts had started at Muguga, under an FAO/UNDP project. This programme was led by Dr M. Cunningham and also involved Dr C. G. D. Brown. They were mainly looking for a vaccine.

Before long, they managed to grow ECF parasites (*Theileria parva*) in test tubes, by itself a scientific breakthrough. Now it was possible to do more research to find what drugs would work on the parasites in test tubes, thus

saving cattle from being used for experiments.

These cultures from Muguga were passed to Wellcome at Beckenham in UK. They screened many thousands of compounds and in 1974, Dr Nick McHardy discovered the activity of one compound, Menoctone as a possible cure for East Coast Fever.

Dr McHardy told the *Nation*: "I was using a tissue culture system of the East Coast Fever organism *Theileria parva*, using a method which was discovered by scientists working at Muguga."

In 1975, Wellcome made tests on Menoctone at Muguga to find out its effectiveness in the treatment of ECF. According to Dr Dolan of Muguga, "the drug worked. It cured experimental East Coast Fever."

The new drug hit a snag, however, said Dr McHardy: "Unfortunately, Menoctone was too expensive." This was because it was a hard compound to synthesise. According to Dr. David Morgan, "Menoctone was rejected on cost grounds".

But this did not discourage the scientists. Back in the UK, Dr Alan Hudson came in and did the chemistry. It was soon found out that analogues of Menoctone showed activity against the ECF parasites.

Preliminary studies on cattle were carried out by Wellcome at Kabete and then extensive screening against parasites, isolated from throughout East Africa, was undertaken at Muguga.

Experiments testing varied dose rates and treatment

at different stages of disease were carried out while infections induced by ticks were treated in an artificially infested paddock. From these experiments, one compound, Parvaquone (then code-named 993C) proved to be the most effective.

In 1979, Wellcome felt that there was the need to develop Parvaquone, which had been given a trade name, Clexon. Said Dr Morgan: "If we had said Clexon was expensive, we would still not have had a drug yet."

Said Dr Hudson, the man behind the discovery of the drug: "Menoctone takes 10 stages to develop, whereas Clexon takes only one." He had started the work on Clexon in 1976.

More tests on Clexon were held. Wellcome and the Ministry of Livestock Development agreed that Muguga should carry out the field trials at Trans Mara, Laikipia and Busia, where East Coast Fever is prevalent. Three of the farms were private while the farm at Busia was Government-owned.

Miracle

Dr Mulela said it was necessary to do further field trials because "in the field, the susceptible animals would be exposed to natural challenge. Here it was challenge from a bottle. It meant that it was an equal amount of dosage to each animal whereas in the field it would depend on the amount of ticks."

Dr Dolan said that the trials were carried out by officers of the veterinary research department between 1981 and June 1982, with the assistance of staff from the

veterinary investigation laboratories at Kericho and Karatina.

The trials, he went on, confirmed Parvaquone to be effective in treating natural ECF and the subsequent products of the treated animals were good. It was shown in Mara that treated animals were immune to ECF, a proof that Parvaquone "not only treats but immunises".

Said Dr Alan Young: "When animals are artificially infested by ECF and treated before they are clinically ill, they develop immunity. This is being explored as a potential vaccination method in the field."

Using results received from Muguga, Dr Morgan said, the drug had to undergo more tests for safety and toxicology, before it could be sold to farmers.

"It has taken us four years to come to it", Dr Morgan said. "It might sound a lifetime to farmers, but in the scientific

world, it is a miracle. We have proved it to be a very safe drug."

Further research is still being done to see if a cheaper compound can be found. Meanwhile farmers will have to use Clexon.

The drug is yet to be registered with the Government. Once that is done farmers will be told of its pricing. Wellcome's general manager, Dr James Njau, said that figures given in the Press about its cost recently were all wrong.

Dr Njau told the *Nation* that Clexon can also cure Corridor Disease, which is similar to ECF in many aspects. The drug will have to be administered using syringes and dosage will be bodyweight.

LIVESTOCK FARMERS FEAR EPIDEMIC

Nairobi SUNDAY NATION in English 13 Mar 83 p 5

[Article by Peter Ngunjiri]

[Text]

Farmers in Nyandarua District fear a livestock epidemic due to what they term "poor management of cattle dips by Government officials".

The farmers say that when they used to run their own dips, cows rarely died of tick-borne diseases. Last week an Ol Kalou farmer told the *Sunday Nation*: "Within 50 days, four of my cattle have died."

The district is served by the National Dipping Programme (NDP), a body through which the Government has taken over the control of all dips. Nyandarua is largely an agricultural district.

Some farmers say ticks might have developed resistance to dip chemicals. They would wish the chemical to be checked, and if this is true changed.

Government officials, on the other hand, are quick to point an accusing finger at the farmers. They claim the farmers have broken every dipping rule. That, the officials say, is why the animals are infested with ticks.

The *Sunday Nation* probed the dips' problem and talked with farmers and Government officials at Ol Kalou and Nyahururu. The *Sunday Nation* also interviewed the manufacturers of the dipping chemicals used in Nyandarua, Wellcome Kenya Limited of Kabete in Nairobi.

According to Wellcome's general manager, Dr James Njau, the company supplies dip chemicals, through the Government, to all districts in Central Province (except Kiambu) and Baringo, Kericho, Nandi, Kisii and Embu. There are other companies supplying the chemicals, but Wellcome takes the lion's share.

Some leading farmers in Nyandarua District said that up to 1976, they used Coopertox, also manufactured by Wellcome. Coopertox was withdrawn in favour of the chemical currently used, Delnav DFF.

"By the time Coopertox was withdrawn, ticks had started developing resistance to it," one farmer said.

Wellcome's entomologist, Mr Moses Gichanga, said that only the blue cattle tick had developed resistance to Coopertox. "In areas where blue cattle tick is not found, Coopertox is still in use," he said.

Farmers in Nyandarua said Delnav DFF initially freed their animals from ticks. But with the coming of the National Dipping Programme, through which farmers lost control of dips' management to Government officials, things changed.

The farmers suspect it is the running of dips which is faulty. When they ran the dips themselves, the problem wasn't so serious.

"In the past few months, the situation has been going out of control," one farmer lamented. "Ticks are increasing. This is due to poor management of cattle dips by dip attendants. We don't believe it's the fault of the chemical."

Asked why he was defending the chemical, he replied that he had seen the excellent conditions of privately-owned dips which use the same chemical, Delnav DFF. He wondered why complaints are not received from other districts, where the same chemical is used.

Another farmer said "dip attendants sell the chemical."

This is an open secret. One attendant was caught red-handed and charged."

The farmer complained that this attendant was only sacked and not jailed.

Attendants collect dip chemicals from divisional livestock development offices. If the dipping day is, say, Thursday, chemicals are collected on the Monday before. Attendants keep them at their homes.

"Sometimes chemicals meant for us find their way to farmers who have private dips and districts not under the NDP scheme," one farmer complained.

The farmer said less chemical is put in their dips by the attendants as a result. But when the attendants are sending dip water samples to Wellcome for testing, they cover up by putting more chemical in the samples.

Farmers or Wellcome company agents should collect the samples for testing, one farmer suggested.

When Wellcome used to do the work, there were never complaints from farmers. "Wellcome should pay surprise visits to farms. We should have dip attendants who are themselves farmers," a farmer said.

A Ministry of Livestock Development official who talked to the *Sunday Nation* refuted these claims.

He said that ticks increased in 1980 because there was an outbreak of the foot and mouth disease and animals could not be dipped. No one was to blame, he said.

He said "1982 was a rainy year. Whenever cows were dipped, rain would wash the chemical off their skins. That does not mean the chemical is weak. Rain water also got into dips and diluted chemicals."

Manufacturers of Delnav DFF have a testing unit, and its boss, Mr Simon Thiga, said: "We receive dip samples from farmers and check on their strength. We then say what should be done. This is a free service."

He admitted receiving samples of extremely high strength which appeared unreal.

Wellcome's entomologist, Mr. Moses Gichanga, told the *Sunday Nation* that "the presence of engorged ticks could be a sign of resistance or evidence that animals have not been dipped."

Mr Gichanga said ticks often develop resistance to chemicals. "The tendency has been to move from one chemical to another when this happens," he said.

At Wellcome's research department, ticks collected from animals in different parts of the country are tested for resistance.

Any findings are channelled to the Veterinary Department.

CSO: 5400/211

BRIEFS

LIVESTOCK RESTRICTED--Kwale, Thursday, (KNA)--The Kwale district livestock development officer, Dr Charles M. Kimaru has served a quarantine notice banning the movement of livestock and their products in Mwavumbu location of Kwale district due to an outbreak of foot and mouth diseases. The notice has been imposed to stop the spread of the disease in the area. The officer also instructed that all animals that might have died of the disease should be burnt or buried at a depth of not less than four feet in the ground. [Text] [Nairobi THE NAIROBI TIMES in English 18 Mar 83 p 4]

CATTLE MOVEMENT RESTRICTION--Kericho, Friday, (KNA)--The Rift Valley PC, Mr H. Oyugi has said that anybody who will be found moving livestock in Kericho district without a permit from the veterinary department should be arrested and taken to court. Oyugi issued this order when he addressed a baraza at Uhuru Garden, Kericho town, during his one day tour of the district. The PC expressed concern over the spread of foot and mouth disease in the district, noting that the uncontrolled movement of cattle in the area could be blamed for the spread of the disease. Oyugi commended the Kericho people for their efforts in farming and said the district was producing a lot of tea that was earning the country the much needed foreign exchange. He added that the district was also a leading producer of milk and maize. He assured the farmers that they would continue to get support from the government. He urged them to step up food production and boost their income. On the delay of payment for maize, the PC assured the gathering that the government had made arrangements to pay the local farmers who sold their crops to the national cereals and produce board as from this week. The PC also called on the people of Kericho to enrol as Kanu members in large numbers. He asked managers of the tea estates to help in selling party tickets to their workers. "We should show that we are supporting President Moi and the government by becoming members of the ruling party." [Text] [Nairobi THE NAIROBI TIMES in English 12 Mar 83 p 11]

TSETSE FLY INCREASE--Tsetse fly are on the increase in the Lambwe Valley and the Ministry of Livestock Development has been blamed for failure to provide finance for eradicating them. A report on Tsetse control and eradication in the area released last month, said that failure to clear tsetse fly by ground spraying and bush clearing had allowed the increase of sleeping sickness and tripanosomiasis. A ground spraying and bush clearing plan recommended two years ago was revised last year and it was estimated it would cost Sh4.4 million. The project was not undertaken because money was not released by the Government. Area spraying with non-residual insecticide which was carried out in the same year at a cost of Sh2.8 million, failed because there

was no proper plan for a follow-up, the report said. The use of dieldrin as a ground spraying insecticide against tsetse has been strongly argued in the report, but the Lake Basin Development Authority stated that the insecticide was banned by the Kenya Cabinet in 1981. The provincial livestock development officer, Mr J.S. Mburu, denied the allegation and said that he would have been notified. "We are still using the insecticide and have even tendered for more," the officer stated. Impregnated screens which were supposed to have been installed around villages and parks in the valley as part of mopping up exercise have not been installed, the report said.

[Text] [Nairobi DAILY NATION in English 21 Mar 83 p 5]

FEVER 'CAN BE CURBED'--The east coast fever which kills about 70,000 cattle in Kenya annually could be controlled through good farm management, according to the Director of the Veterinary Research Department at Muguga, Dr W.N. Masiga. He told a scientists conference that many cattle recovering from primary infections of the fever would suffer from a reduction in productivity. He suggested that it might be necessary to limit buffalo intrusion by fencing grazing areas or by increasing dipping or spraying of cattle to curb the disease. Dr Masiga said that when cattle move indiscriminately all over the country, control measures become difficult. He said the department of veterinary services is working on ways to control the disease.

[Text] [Nairobi DAILY NATION in English 25 Mar 83 p 3]

ANIMAL QUARANTINE LIFTED--MOYALE, Tuesday (KNA)--The four-month long quarantine that was imposed by the veterinary department in Moyale and Sololo divisions of Marsabit District has been lifted. In a circular letter, the Marsabit district veterinary officer, Dr. Njoroge stated that the decision had been made following a complete cure of the foot-and-mouth disease in the divisions affected. Livestock owners, he said, could now move or sell their animals outside their areas. [Text] [Nairobi THE NAIROBI TIMES in English 23 Mar 83 p 3]

CSO: 5400/219

LEBANON

BRIEFS

INFECTIOUS DISEASE HITS CATTLE, SHEEP--Southern Lebanon, 11 Apr (ITIM)--
Farmers in southern Lebanon have recently begun slaughtering hundreds of
sheep and cattle after they were diagnosed as suffering from an infectious
disease. The farmers have requested that Israel help them to overcome this
phenomenon. [Text] [TA111809 Tel Aviv ITIM in Hebrew 1755 GMT 11 Apr 83]

CSO: 5400/4516

RINDERPEST DEATHS REPORTEDLY SERIOUS IN GONGOLA, KADUNA

Outbreak Reported

Kaduna NEW NIGERIAN in English 21 Feb 83 p 15

[Article by Kola King]

[Text] AN outbreak of rinderpest has been reported in Dumne Local Government in Gongola State. Rinderpest is a contagious virus cattle disease. This was disclosed by the Gongola State Commissioner for Forestry and Animal Resources, Alhaji Barkindo Mustapha. Alhaji Barkindo said the outbreak of the disease was first reported in Borno State. But he said the deadly disease had killed hundreds of cows in Dumne Local Government. However, he stated that 11,000 cattle have so far been inoculated against the disease. The commissioner said the disease was capable of wiping out all the cattle and other livestock in the state, and therefore called on cattle owners to report cases of rinderpest promptly to zonal animal health offices.

Cattle Deaths in Gongola

Kaduna NEW NIGERIAN in English 25 Feb 83 pp 1, 21

[Article by Abu Tapidi]

[Text] ABOUT 673 heads of cattle have been killed following an outbreak of rinderpest in 11 local government areas of Gongola State. Similarly, a total of 3,117 cattle have been infected by the disease while another 38,398 cattle were vaccinated against infection as at the end of last week. The local governments where the cattle were reported killed are Dumne (247), Song (120), Hong (122), Gombi (one), Madzi (58), Fali (22), Numan (26), Borrong (five), Yola (44), Mayo-Belwa (30), and Karim-Lamido (10). The state's Commissioner for Animal Health and Forest Resources, Alhaji Muhammadu Barkindo Aliyu Mustapha, told the New Nigerian in Yola yesterday that the situation was so serious that they had to despatch emissaries to the Federal Government, the National Veterinary Institute, Vom in Plateau State and other neighbouring states for immediate assistance. According to the commissioner, a total of 170,000 doses of vaccines had been received from Vom while 5,000 and 2,000 doses of vaccines were received from Bauchi and Plateau states respectively. He explained that about 91,000 doses of the vaccines had been distributed to the zonal veterinary offices where the cases of the rinderpest outbreak were reported. Alhaji Barkindo said all the field staff had been mobilised for a mass vaccination campaign. The commissioner stated that about four million doses of the vaccines were needed for a state-wide vaccination campaign to check spread of the disease. He appealed to cattle-rearers in the state to always report any outbreak of cattle diseases for prompt attention and urged the Federal Government to provide the necessary assistance to the state government. Recently, livestock figures showed that there were 4,282,171 heads of cattle in the state, while the remaining 10,187,512 are made up of sheep, goats, pigs, donkeys, horses and poultry in all the 40 local government areas.

Cattle Deaths in Kaduna

Kaduna NEW NIGERIAN in English 2 Mar 83 p 9

[Article by Shitu Saude and Dupe Motojehi]

[Text] **THE dangerous killer disease rinderpest — has killed 300 head of cattle in Kaduna State. More than 2,000 cattle have been affected by the disease.**

The state Commissioner for Animal Health and Livestock Services, Alhaji Lawal Sani Zangon Daura, told newsmen on Monday that the most hard-hit areas were Funtua and Malum-fashi.

He further said an isolated case had also been reported from Daura while Kaduna Local Government area and parts of Kachia were affected by the disease.

Alhaji Lawal explained that rinderpest was an "acute virus disease" of hoofed animals particularly cattle, characterised by "stomatitis and gastroenteritis" which result in diarrhoea and discharges from nose and mouth.

The commissioner said the disease was supposed to have been eradicated in 1971, but it suddenly resurfaced in Sokoto State in 1980.

Alhaji Lawal said the disease was treated with vaccines, but that at the moment, "there is a shortage of the vaccines all over the country". The National Veterinary Research Institute in Vom near Jos is working towards making the vaccines available.

He appealed to the public to also report any outbreak of the disease.

Alhaji Lawal said an immunisation campaign was being organised so that not only affected animals but all others were vaccinated.

Meanwhile, the Miyatti Allah Cattle Rearers Association of Nigeria, has urged the Federal Government to take positive measures to curb the current spate of outbreak of cattle diseases.

The National Director of the association, Alhaji Shehu Abubakar, explained in a statement in Kaduna that unless urgent measures were taken, more cattle would die, adding "it

is not in the interest of the nation to import meat from overseas".

Alhaji Abubakar announced that the association would celebrate its anniversary on March 26 and 27 at Murtala Square, Kaduna.

The Minister of Agriculture, Malam Adamu Ciroma, is expected to be the guest of honour on the occasion.

The General Manager, National Livestock Production Limited, Professor Shehu Alhaji Bida, said the company had embarked on immunisation programme to forestall any outbreak of cattle disease in their ranches.

He told the New Nigerian in Kaduna that there had not been any outbreak of rinderpest in Galambi, Mokwa or Manchock in recent times but added that consequent upon a recent outbreak of the disease in Gongola State, the NLPC had been immunising its cattle.

CSO: 5400/193

RINDERPEST PROBLEM LAID TO FULANI CATTLE RAISERS

Lagos DAILY TIMES in English 17 Mar 83 p 25

[Text] The Federal Government has been alerted over the imminent threat to livestock by diseases, particularly the rinderpest epidemic currently plaguing cattle in the country.

In a statement issued in Kaduna the Miyatti Allah Cattle Rearers Association of Nigeria (MACRAN) said that many cattle have died as a result of the diseases.

The statement signed by the national director of MACRAN, Alhaji Shehu Abubaker said that if effective measures were not taken to arrest the situation, live-stocks would be adversely affected.

Meanwhile, the Kaduna State Commissioner for Animal Health and Livestock Services, Alhaji Lawal Sani Zangon Daura has announced that the state government has undertaken a control measure to curb the rinderpest diseases.

According to the commissioner, the major treatment of the deadly disease is by yearly immunization.

However, he said that such an exercise has not been fruitful enough because the Fulani cattle rearers were uncooperative.

He said these cattle rearers often do not present all their cattle for immunization.

Alhaji Daura, said this is the reason why this disease which was supposed to have been eradicated in 1971 has surfaced again.

He disclosed that the control measure of massive medication with antibiotic on the affected animals would only reduce the symptoms of the disease which usually leads to death.

The measure, he said, would continue pending the availability of vaccine from the National Veterinary Research Institute, Vom.

CSO: 5400/185

NIGERIA

BRIEFS

RINDERPEST EPIDEMIC KILLS CATTLE--A total of 7,380 young cattle have died in Kaduna State since the outbreak of rinderpest disease. This was disclosed by the commissioner for animal health and livestock services. The commissioner also stated that 363,653 cattle have been inoculated against the disease. The commissioner appealed to cattle rearers, especially the Fulanis, to cooperate with the veterinary staff of their local government areas in curbing the disease. [Kaduna Domestic Service in English 1700 GMT 14 Apr 83 AB]

CSO: 5400/227

INCIDENCE OF RIFT VALLEY FEVER VIRUS STUDIED

Johannesburg SOUTH AFRICAN JOURNAL OF SCIENCE Vol 79 Feb 83 pp 61-64

[Article by: B.M.McIntosh, P.G. Jupp, I. dos Santos and A.C. Rowe:
 "Field and Laboratory Evidence Implicating *Culex zombaensis* and *Aedes circumluteolus* as Vectors of Rift Valley Fever Virus in Coastal South Africa"]

[Text]

During an outbreak of Rift Valley fever in the coastal region of Natal province, 7 isolations of Rift Valley fever virus were obtained from 6621 Culex zombaensis and one isolation from 1953 Culex neavei. The outbreak lasted three months, infected about 40% of a herd of 300 cattle, causing 11 abortions and four deaths among adult cattle, and one human infection. At the peak of the outbreak, Culex zombaensis was the most prevalent species, comprising 49% of the mosquito catch. Fifteen out of 37 blood-meals of this species were from cattle. In laboratory tests, Cx. zombaensis and Aedes circumluteolus were readily infected after feeding on viraemic hamsters circulating high concentrations of virus. At low concentrations Cx. zombaensis was more susceptible to infection than the other species. Both species transmitted the virus to hamsters on numerous occasions after ingesting high doses of virus, although an incubation period of more than 14 days was necessary to achieve optimum transmission by Cx. zombaensis. It is concluded that Cx. zombaensis was the main vector during the outbreak and Ae. circumluteolus was possibly a vector during the earlier stages.

Introduction

Infection of cattle with Rift Valley fever (RVF) virus in the sub-tropical, coastal region of Natal province in South Africa, is widespread, enzootic, and periodically epizootic. The bovine disease in this region has not been a significant veterinary problem, much of it is clinically unrecognized, while those few outbreaks identified have apparently been localized to individual herds. Furthermore, as could be expected from the low incidence of bovine disease, the disease in humans has rarely been diagnosed. This situation is in marked contrast to the severe, widespread epizootics in sheep and cattle, accompanied by significant secondary involvement of humans, which have intermittently occurred on the temperate, inland plateau over the past 30 years.¹⁻²

Field vector studies during the epizootic of 1974-75, together with viral transmission experiments in the laboratory, indicated that *Culex theileri* was the main epizootic vector on the plateau.¹ However, this is a scarce species on the Natal coast, and on this account, could not be involved to a significant degree in this region.

Since 1955, as part of a long-term programme of arbovirus surveillance, periodical surveys for infection by these viruses in wild

mosquito populations have been carried out on the Natal coast.¹⁻⁶ Despite tests on over 400 000 mosquitoes of many species only three isolations of RVF virus have been obtained. These were two isolations from *Aedes circumluteolus* in 1955 at Simbu Pan in northern Natal, and a single isolation from *Eretmapodites quinquevittatus* in

Table 1. RVF immunity survey of cattle and human beings, on the infected farm, April 1982.

	No. tested	Neg.	Number positive at indicated HI titres*								Deaths	Infection rate
			20	40	80	160	320	640	1280	2560		
Cattle	246	100	10	18	25	41 (3) ^b	28 (5)	14 (1)	9 (2)	1	4	97/250 (39%)
Humans	33	28		1	3			1				1/33 (3%)

*Recently infected animals assumed to have titres of > 80.

^bFigures in parentheses indicate number of aborting cows with the relevant titres.

1971 at Port Shepstone in southern Natal. Other isolations, both from cattle, of which we have knowledge, include an isolation from an aborted foetus at Empangeni in northern Natal in 1969 and another from a fatal infection in an adult animal in 1974 at Mposa, some 20 km north of Empangeni. Further evidence of RVF virus activity was obtained in 1972 when RVF was diagnosed serologically in a human being who became ill after an autopsy on a cow at Eshowe.

Antibody surveys have also identified human and domestic animal infection in coastal Natal. Smithburn *et al.*⁷ found 8 of 138 children (5.8%) and 21 of 145 adults (14.5%) from localities in riverine and pan habitats on the northern coastal plain (Tongaland), positive for neutralizing antibodies. Kokernot *et al.* found 24 of 235 cattle, sheep and goats (10.3%) in the same area to have neutralizing antibodies. Included among the positive reactors was a high proportion of young animals, indicating recent and possible enzootic infection. In the same survey only one of 144 animals on the adjacent Lebombo hills was positive. In 1971 an antibody survey among 708 cattle from 15 herds in the districts of Empangeni and Port Shepstone showed 18% to have antibodies. Positive reactors were present in 13 herds spread over both districts. Surveillance over the following two years of some of these herds, detected 8 seroconversions among 47 cattle in 1972 and 11 seroconversions among 244 cattle in 1973.¹

Despite this recurring activity by RVF virus, the paucity of isolations from wild-caught mosquitoes has made any firm conclusions regarding the identity of vectors on the coast virtually impossible. On grounds of virus isolation, abundance and host preference, certain species seemed possible vectors and were further evaluated in laboratory transmission experiments.^{1,9} In these tests, *Er. quinquevittatus*, *Cx. zombaensis* and *Culex neavei* were readily infected and transmission demonstrated. *Ae. circumluteolus* became infected but transmission was not achieved in a test considered inconclusive, since only four mosquitoes fed during attempted transmission. *Culex rubinotus*, primarily a rodent-feeder, proved relatively refractory to infection and, moreover, failed to yield a single isolation of RVF virus from over 20 000 specimens collected over several years on the Natal coast. Despite this not inconsiderable effort, there was insufficient field evidence to identify vectors: to identify particular species with greater assurance it seemed necessary to obtain multiple isolations from such species during recognized bovine infection.

This evidence was secured recently when several isolations were obtained in November 1981, from *Cx. zombaensis* during an outbreak of RVF in a dairy herd near Mtubatuba, about 50 km north

of Empangeni. After these isolations had been made the farm was visited in January and May 1982, after transmission had ceased, to collect adult females of *Cx. zombaensis* and *Ae. circumluteolus* to carry out laboratory transmission tests to determine more precisely the vector capability of these species.

Methods and materials

The area in which the farm lies has a subtropical climate, an altitude of about 100 metres, a mean daily maximum temperature

of about 26°C and an average annual rainfall of 1055 mm, of which 67% falls from October to March. In 1981 unseasonally high falls totalling 209 mm occurred in September and October, which were very likely crucial to the occurrence of the outbreak. The natural vegetation on the farm and its environs, like much of coastal Natal, is severely depleted through cultivation of sugar cane and artificial pastures but remnants of indigenous woodland remain along a ravine and as a narrow strip along the Msunduzi river. Ground pools, with associated marshland vegetation, occur along this river, which evidently provide the main aquatic habitats of the predominant species collected.

Mosquitoes were collected overnight from 13 to 20 November in portable light and net traps, both baited with solid carbon dioxide. Light traps and net traps were set for a total of 48 and 22 trap-nights respectively. Mosquitoes were stored at -70°C until identified to species, pooled, ground up, made into suspensions and inoculated intracerebrally into 2-3-day-old mice for attempted virus isolation. Unfed mosquitoes were pooled separately from those containing recognizable ingested blood. Virus isolates were identified by complement fixation; their antigens were prepared by acetone extraction of infected suckling mouse brain. Ascitic fluids obtained from mice hyperimmunized with selected arboviruses were used as a source of viral antibodies.¹⁰ Haemagglutination-inhibition (HI) tests were done by microtitre techniques using acetone-extracted sera and antigens prepared in the same manner as for complement fixation.¹⁰

Mosquitoes used in transmission experiments were wild-caught females, or their immediate progeny. They were held in the laboratory at 25-26°C and 75-80% relative humidity. They were infected by feeding on viraemic hamsters after inoculation with the AN1830 strain of RVF virus in its fifth intracerebral mouse passage. Viraemic levels were determined by titration in Vero cells or in mice inoculated intracerebrally. Blood was collected immediately before the hamsters were exposed to the mosquitoes. Feeding was usually complete within a half to one hour. The mosquitoes were held for 14 to 36 days, allowed to oviposit, and refed on susceptible

hamsters to attempt transmission. With the exception of one experiment, mosquitoes were refed individually on hamsters so that transmission rates could be determined. These are expressed as the ratio or percentage of infected mosquitoes that transmitted. Infection rates were determined by inoculation of mosquitoes individually into suckling mice and this was usually done two days after transmission attempts.

Results

Description of outbreak

About 300 cattle were on the farm during the outbreak, which probably started in September, as the first abortion occurred on 20 September and the cow had an HI antibody titre of 1/640 when tested in April 1982. There were 10 further abortions in which the cows all subsequently showed similar high titre antibodies (Table 1); three in October, six in November and the last on 12 December. RVF virus was isolated from a foetus aborted on 14 November. Four cows died, three during November and the last in mid-December. In three of these fatalities, RVF infection was diagnosed

Table 2. RVF virus isolations, with number of mosquitoes tested for virus during outbreak in cattle, Mtubatuba, 13–20 November 1981.

Genus (subgenus) species	No. pools	No. mosq.	No. isolations
<i>Anopheles (Anopheles) tenebrosus</i>	8	248	
<i>Anopheles (Cellia) pharoensis</i>	3	60	
<i>Anopheles</i> spp. (mostly <i>tenebrosus</i>)	20	1 471	
<i>Coquillettidia</i> spp.	3	11	
<i>Mansonia (Mansonioides) uniformis</i>	17	769	
<i>Mansonia (Mansonioides) africana</i>	4	96	
<i>Aedes (Neomelanicion) circumluteolus</i>	8	267	
<i>Aedes (Neomelanicion) luteolateralis</i>	6	52	
<i>Aedes (Neomelanicion) spp.</i>	2	148	
<i>Aedes (Aedimorphus) spp.</i>	17	424	
<i>Aedes</i> spp.	3	10	
<i>Culex (Culex) zombaensis</i>	114	6 621	7
<i>Culex (Culex) neavei</i>	27	1 953	1
<i>Culex (Culex) antennatus</i>	22	1 192	
<i>Culex (Culex) pipiens</i>	4	63	
<i>Culex (Culex) theileri</i>	2	5	
<i>Culex (Culex) spp.</i>	5	64	
<i>Culex (Eumelanomyia) rubinotus</i>	5	78	
	270	13 532	8

histologically from the liver by Dr J. A. W. Coetzer of the Veterinary Research Institute, Onderstepoort. It seems therefore that the outbreak lasted about three months, probably reaching a peak in November, the same month that mosquitoes were collected.

Between 20 and 30 November, the cattle received a single inoculation of inactivated RVF vaccine. In April 1982, 246 cattle and all 33 human beings resident on the farm were bled and their sera tested for RVF HI antibodies. Table 1 shows that 100 cattle were negative for antibodies, 53 positive at titres of 1/20 to 1/80 and 93 positive at titres of 1/160 to 1/2560. The 11 cows that aborted were in the latter category and it is likely that the remaining infected animals were also included in the same group. It seems therefore that the infection rate in the herd was about 40%, certainly not much higher, although it may have been rather lower if a significant number of non-infected vaccinees were included in the group of animals with titres of 1/160 or greater, which seems unlikely. Only one of the humans reacted at high titre and this would appear to be the only infection during the outbreak.

Virus isolations

Collections of mosquitoes on the farm in November 1981, showed that mosquitoes were very abundant and about half of the catch

consisted of *Cx. zombaensis*. About two-thirds of the total catch was tested for virus and Table 2 lists the numbers of the various species tested, the number of pools inoculated and the isolations of RVF virus. This shows that of the 13 532 mosquitoes tested in 270 pools half consisted of 6621 specimens of *Cx. zombaensis*, which yielded seven isolations, giving a minimum field infection rate of about 1 per 1000. The only other isolation came from 1953 *Cx. neavei*. All the infected mosquito pools consisted of unfed specimens. Among the *Aedes* tested were two *Neomelanicion* species, *circumluteolus* and *luteolateralis*, both possible vectors of which only small numbers were obtained, suggesting that both species were scarce at the time collections were made.

Host preferences of *Cx. zombaensis*

The blood-meals of 37 *Cx. zombaensis*, obtained during the above collections, were tested by Mr D. L. Theron, National Institute for Tropical Diseases, in a precipitin test against bovine and human antisera to identify the host species. Fifteen meals reacted against the bovine and none against the human antiserum. Collections made in goat-baited net traps set on the farm during May 1982, when numbers of *Cx. zombaensis* were much lower than during the outbreak, trapped 72 specimens in 14 trap-nights. Of these,

21 were blood-engorged, 8 gravid and 43 unfed. This gives a feeding rate on the goat of 33%, if the gravid specimens are disregarded.

Laboratory transmission

The results of the tests on the vector capability of *Cx. zombaensis* and *Ae. circumluteolus*, given in Table 3, show that both species

Table 3. Experimental infection of *Cx. zombaensis* and *Ae. circumluteolus* with RVF virus and their transmission of the virus between hamsters.

Species	Virus dose (log ₁₀ /ml)	Infection rate		Transmission rate	
		Day	Ratio* (%)	Day	Ratio* (%)
<i>Cx. zombaensis</i>	8.5 - 9.6	16	40/42 (95)	14	1/40 (3)
<i>Cx. zombaensis</i>	7.3 - 9.9	24	37/42 (88)	22	15/37 (41)
<i>Cx. zombaensis</i>	7.3 - 9.9	31	12/22 (55)	29	5/12 (42)
<i>Cx. zombaensis</i>	8.0	28	34/37 (92)		Not done
<i>Cx. zombaensis</i>	5.2	28	17/49 (35)	26	3/17 (18)
<i>Ae. circumluteolus</i>	9.3 - 10.2	16 - 17	27/38 (71)	16	8/23 (35)
<i>Ae. circumluteolus</i>	9.3 - 10.2	27	22/23 (96)	25	7/22 (32)
<i>Ae. circumluteolus</i>	9.3 - 10.2	33	8/8	31	3/8 (38)
<i>Ae. circumluteolus</i>	6.0	30 - 38	0/34	21 - 36	0/13

*Number infected/total tested. *Number transmitting/number infected feeding. *In these transmission experiments hamsters were exposed to groups of mosquitoes: in all, 13 mosquitoes which were not tested for infectivity bit 7 hamsters.

were readily infected at the higher virus doses, but showed either reduced susceptibility (*zombaensis*) or non-susceptibility (*circumluteolus*) at the low dose. Both species transmitted the virus at a moderately high rate after infection at the higher virus doses, although optimum transmission by *Cx. zombaensis* took longer to appear, indicating a rather lengthy extrinsic incubation period. When this had been reached, however, its transmitting ability was marginally superior to that of the other species at the high virus doses and definitely superior at the lower dose. Because of its greater susceptibility to infection and its ability to transmit after ingesting relatively lower virus doses, *Cx. zombaensis* would evidently be a more efficient vector in the field. The usually longer persistence of adult *Culex* populations compared to *Aedes* would also enhance the vector efficiency of this species.

Discussion

The studies clearly indicated that *Cx. zombaensis* was the main vector during the outbreak. The mosquito was the only one to yield multiple isolations of RVF at the height of the outbreak, it was the most prevalent species at that time, it fed on cattle, and transmitted the virus experimentally at an adequate level of efficiency. Although high infecting doses were used in the transmission tests, they were in keeping with viraemic levels often reached in bovine infection and were therefore relevant to transmission in the field. It seems likely therefore that *Cx. zombaensis* was deeply involved in this particular outbreak. Thus this finding identifies a third *Culex* species of the subgenus *Culex* in the role of epizootic vector of RVF virus: the others being *Cx. theileri* on the South African plateau and a member of the *Cx. pipiens* complex in Egypt.^{1,11}

Some comment is indicated on the possible role of *Cx. zombaensis* in bovine infection generally in coastal Natal, where enzootic bovine infection is evidently the norm, and its possible function in viral maintenance. Since 1955 and prior to the present studies, 5 888 *Cx. zombaensis* (1.4% of the total mosquito catch) from coastal Natal and Mozambique were tested for virus with no isolation of RVF virus. This would tend to absolve this species as a maintenance vector, as the collections were made over a very long period and in several localities, but it would not preclude it as a vector of enzootic bovine infection and occasional epizootic infection in these animals. These roles would be difficult to detect during the inter-

mittent surveys conducted because of the occult nature of enzootic infection and the infrequency of the other in Natal. In the prevailing absence of more field evidence implicating other species, it is reasonable to believe that *Cx. zombaensis* is an important vector of bovine infection in Natal and perhaps elsewhere in tropical Africa. There is supportive ethological and distributional evidence in this regard.

There is good evidence that *Cx. zombaensis* feeds readily on domestic ruminants. In addition to that already mentioned, Pater-son *et al.*¹² reported similar findings in this regard in northern Natal. Of 130 blood-meals tested by them, two were from chickens, 19 from human beings, 12 from cattle, 33 from sheep, 17 from bushbuck, and 47 from dogs.

Cx. zombaensis is primarily a tropical species, being absent from the South African temperate plateau. We have found it more prevalent in northern Natal, where it averaged 1.6% of the total catch, than in southern Natal where temperatures are significantly lower, although never before in our studies has it predominated so strongly as in the Mtubatuba collections. Its aquatic habitat is widely distributed in coastal Natal, and it must be regarded as a moderately prevalent and widely distributed species in this region. Its occurrence has been reported from numerous countries in tropical Africa south of the Sahara.

The fact that about 60% of the Mtubatuba herd remained free of infection during an outbreak of three months' duration, probably for most of the time in the presence of high populations of *Cx. zombaensis*, suggests the existence of some factor retarding transmission. One possible factor is the rather long extrinsic incubation period apparently required before *Cx. zombaensis* reaches its optimum transmitting efficiency. Could this be a reason why RVF has failed to develop into the extensive epizootics noted on the South African plateau and in Egypt?

The two isolations of RVF virus from *Ae. circumluteolus* in Natal in 1955, mentioned above, taken together with its ability to transmit the virus as demonstrated in the present transmission tests, indicate that this species, also, must be regarded as a potential vector in Natal. While its numbers were low in November at the peak of the outbreak it is likely that they were high soon after the September rains, as could be expected of an aedine species, in which case it might have had a more positive role in the early stages of the out-

break. It feeds readily on cattle,¹² is locally extremely prevalent in northern Natal,⁴ and it seems could have some role in bovine infection in this region.

The low isolation rate of RVF virus from mosquitoes in the absence of infection in domestic ruminants in South Africa and elsewhere in Africa is perplexing in any attempt to explain the persistence of this virus on the basis of mosquito-mediated survival. With the possibility in mind that other insects may be involved in viral maintenance we have attempted to isolate RVF virus from other possible vectors which have included *Culicoides*, Simuliidae and Phlebotominae. Phlebotomines seemed particularly apt in providing an answer to the evident persistence of RVF virus in arid

areas in South Africa, and the recent demonstration of serological affinities between RVF and certain phlebotomine-transmitted viruses gave added relevance to phlebotomines as possible maintenance vectors.¹³ Efforts in this direction, including tests on over 8000 phlebotomines, have, however, failed to isolate RVF virus.

We thank Mr W. Woolridge for permission to work on his farm, Mr D. L. Theron of the National Institute for Tropical Diseases, Tzaneen, for precipitin tests on mosquito blood-meals, and the Director-General of the Department of Health and Welfare for permission to publish. This work was partially funded by the Medical Research Council by a grant to P. G. J.

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BRIEFS

FOOT-AND-MOUTH BARRIER VIOLATION--Cape Town.--The Conservative Party yesterday demanded the immediate resignation of Mr Fanie Botha, Minister of Manpower Utilisation, for having illegally moved meat over the so-called red-line foot-and mouth disease barrier. The Minister of justice, Mr Kobie Coetzee, told Parliament that Mr Botha only paid a R20 spot fine because "the specific regulation only existed for 22 days when the offence took place". The relevant Act prescribes a minimum fine of R1 000 (or six months) for this offence. The CP's Agricultural Study Group considers the contravention of the regulation with regard to contaminated meat by Mr Botha on July 17 1982 in a very serious light. It gives the following reasons: He was a farmer himself and should have known how harmful the results could have been for other Bushveld farmers; [as published] such areas were specifically put under quarantine whenever there was the slightest possibility of an outbreak of foot and mouth disease; farmers in the past had to kill their stud cattle when there was only a possibility that they could have been in touch with contaminated animals; it was no excuse on Mr Botha's behalf to say he was not aware of a regulation because it was only issued 22 days before he was caught. The CP demanded his resignation because of the very fact that the regulation was still new, Mr Botha should have been fully aware of the existence of the red line in that area, and he was a senior Cabinet Minister. It called upon farmers to take note of Mr Botha's actions. [Text] [Johannesburg THE CITIZEN in English 4 Mar 83 p 4]

CSO: 5400/186

'KILLER TICKS' KILLING CATTLE THROUGHOUT COUNTRY

Mbabane THE TIMES OF SWAZILAND in English 9 Mar 83 p 20

[Article by Donny Nxumalo]

[Text]

FARMERS already reeling from the worst drought in years are now facing a new threat ...killer ticks.

The ticks are reported to be killing cattle throughout the Kingdom.

And the Ministry of Agriculture has warned: "They appear to have become immune to all the chemicals used against them."

A spokesman for veterinary department told The Times that the ticks have killed 150 head of cattle this year. Last year the ticks took 640 head, the spokesman said.

What was needed now was a better dipping chemical, he said. "We have already made an appeal to the farming community for con-

tributions to purchase better chemicals. Some members have already responded."

"Government will be approached when we have collected enough funds to meet them halfway, or else many cattle and livestock will continue to die," he warned.

"These ticks are causing concern among farmers because they appear to be immune to chemicals."

The spokesman said two kinds of diseases were affecting livestock — Red Water and Heart Water.

The Heart Water disease is brought about by the blue tick and the Red Water by the bont legged tick, which the spokesman explained is the more dangerous of the two.

"The symptoms are that the beast will charge at you as though mad. Many such incidents have occurred in the Lowveld, especially in the Shiselweni district," he said.

The spokesman said deaths from the ticks reached crisis proportions last October.

"The present chemicals are not so effective, or at least not in all districts," the spokesman explained.

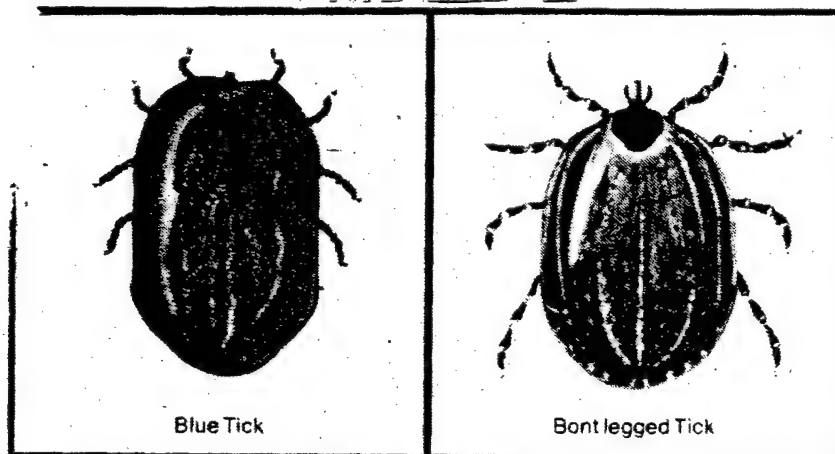
The ticks menace came into light when residents of Nkamanzi in the Zombodze area reported that 14 head had died last week.

The residents said their cattle were killed by the Heart Water disease. The sp-

okesman said most farmers have not learnt to distinguish between the two diseases. However, he said, Red Water was the more dangerous of the two.

Nkamanzi farmer, Lukh-
oza Shongwe said he had lost six cattle in the past week. He added that the disease was so virulent that the cattle only survive for two days after coming into contact with it.

The area's dipping inspector, Mr. Jacob Hlophe said he had lost two cattle. He said the dead animals were usually found with rotten kidneys and lungs. He added that a lot of fluid is found in the chest cavity and the heart.



What the killers look like.

MYSTERIOUS DISEASE KILLS HERDS OF CATTLE

Mbabane THE TIMES OF SWAZILAND in English 4 Mar 83 pp 1, 24

[Article by James Dlamini]

[Text]

A STRANGE jinx appears to have hit peasant farmers at Nkamanzi, in the Zombodze area.

The farmers' crops are being devastated by packs of porcupines in night raids.

Monkeys are also helping themselves to the crops.

And now a mysterious disease is killing the farmers' cattle in large numbers.

The disease seems set to destroy whole herds and its end is nowhere in sight.

The farmers are trying all sorts of tricks to fight the porcupine menace, but they have been unsuccessful because the raids are carried out "guerrilla-style" at night and the animals strike at different places unexpectedly.

The prickly little animals are seem to be well organised and very hard to catch.

"We're definitely jinxed. Why should all this happen to us," one farmer said.

Favourite

The farmers believe the porcupines live on the slopes of a small range of hills overlooking Nkamanzi, about five kilometres off the main road between Manzini and Matsapa.

The animals are elusive that all attempts to catch them with traps have failed. Their favourite crops are maize and pumpkins, but they also eat potatoes.

"What annoys me most is that these animals don't just eat, but each time they strike they devastate the fields so much that one would actually think that it was out of malice," Mr. Nkomiyaphi Maziya said.

"They are coming with such a vengeance that they have harvested all my potatoes. I had a large potato field, but I am buying potatoes now," Mr. Maziya said. "I will be lucky if I am able to harvest one bag of mealies.

"They annoy me because they don't eat the mealies while the cobs are still small, but they wait until it is just ripe and we think we have

something, then they strike as I have never known before," he said.

"The animals break the maize plants with their bodies and claws and then they pick up the cobs. When the grains are finished they throw the cobs away. I think that is why they reap so much. Other animals that eat the whole cob get full quickly and don't devastate so much.

"Sometimes they are so wasteful that they discard cobs before they even finish them and pick up another cob," Mr. Maziya told The Times.

"The reason I think they carry some of the stuff to the mountain slopes with them is that if they come one day they don't come the following day, but strike again the day after. It has become a pattern. What I don't understand is how they organise themselves because they all strike together and on the same day.

Guesswork

"We always know when they will strike, but we never

know whose fields are next. It's guesswork all the time. When we set snares and traps they don't come but strike somewhere else.

"I think these animals are a curse on us," Mr. Maziya said.

Mrs. Martha Shongwe said: "With pumpkins the animals have the cheek to open them and eat the seeds and pulp and leave the shell empty."

"At first we didn't know what was doing it. We just saw the marks of strange paws and a trail of destruction in the fields. We are not used to porcupines. But we are already used to the monkeys. But we were sure that this time it wasn't the monkeys but something else.

"Then one day I found a number of animal's quills. They started to leave more and more quills around and we knew what it was. Personally I have never seen a porcupine alive but I have heard about it and can recognise it if I saw it."

TSETSE FLY STERILIZATION RESEARCH DESCRIBED

Harare THE HERALD in English 4 Mar 83 p 13

[Article by Caroline Allen]

[Text]

THE research section of tsetse control has been working for some time on scent-baited traps which will catch and kill the fly without hazard to the environment.

The section's experiment was started on Antelope Island at Kariba in 1979 when two species of the fly, *Glossina morsitans* and *Glossina pallidipes* were introduced, together with 36 head of cattle to supplement the natural game that a pride of lions had preyed on.

With the introduction of the cattle, the fly thrived and quickly repopulated the island.

The section then installed three scent-baited sterilising traps which were designed to be most effective against *Glossina pallidipes*.

The traps were baited with a combination of acetone and carbon dioxide resembling the ox odour to which the fly is attracted from as far as 100 m away.

As they were caught, an electronic device sterilised and released them, and sterile males returned to untreated females in the bush. A female fly mates only once, so although initially there was no drop in the population, after some months the number fell sharply as the sterilised

flies failed to reproduce.

By December 1981 the research team had shown that the method was efficient in itself, and the drop was not due to any environmental factors, so it withdrew the traps.

"The sterilisation method was very effective and elegant," says Dr Glyn Vale, the unit's Chief Research Glossinologist, "but it was more of scientific interest than practical value. We were not intent on eradicating both the species, as this was an experiment. We concentrated on *G. pallidipes* and left *G. morsitans* as a control.

"The decline confirmed our calculations of what should have happened, so the sterilisers were removed and the more simple baited catch and kill traps installed just over a year ago.

"The previously established decline in both species continued and we now estimate the *G. pallidipes* will be eradicated within weeks."

The method of estimating the tsetse population is a "mark and recapture" exercise where a live ox is led around and attendants with a net catch the flies that settle on the animal.

An even simpler insecticide impregnated trap has been on trial on the mainland near Kariba. Its first design was a suspended rectangle of netting under

a dark waterproof hood, which, according to Dr John Hargrove, a tsetse research entomologist at the unit, was not the best design they could have used.

The unit now has a new trap which is a closer simulation of an ox than before, and hence has a greater chance of catching more flies. Its design incorporates known preferences for certain shades and colours.

The fly usually settles in cool, dark places and the frame is on a swivel to keep the trap aligned with the wind. It has been estimated that 80 percent of the flies approach the "ox" from downwind.

The acetone odour alone may draw the flies, but not all of them settle. The netting on the rectangle, invisible to the flies, carries insecticide which kills them if they collide with it.

The carbon dioxide component is expensive and difficult to supply in the

bush so scientists are now testing an elusive third "X" factor in the ox's breath which will enhance the effect of the present combination, and hopefully allow for the carbon dioxide to be left out.

When tests have been run on the new traps and further development on the odour attractant completed, the researchers believe that the device will be cost competitive with

the then Gatooma-Hartley area for three months.

Organised hunting operations began in 1919 in various parts of the country and continued sporadically until 1922. These contained the fly but never eliminated it completely.

By 1945, 25 000 km² were cleared before an environmental lobby called for a commission of inquiry into the game destruction policy. The commission recommended bush clearing and the use of the new insecticides.

The interests of livestock production (which can only be developed once an area has been cleared of tsetse fly) and the outrage of the conservationists, who protest at the effects of the hunting and spraying operations, have always clashed to some extent.

In 1955, after reconsidering the problem, the commission called for "a modified form of game control". The hunting policy was discontinued in 1960, but two years later six species (wart-hog, bushbuck, kudu, bushpig, elephant and buffalo) were identified as the main tsetse hosts, and selective hunting was re-introduced when it was apparent the bush clearing was not working.

What is it exactly about the tsetse problem that allows it to take precedence over other agricultural and conservationist ideals?

● In humans, a tsetse bite from the fly, which feeds solely on blood, may

produce trypanosomiasis or "sleeping sickness". The Zimbabwean variety is often fatal, but symptoms of the West African disease include listlessness, sweating, nausea and drowsiness, which makes it impossible to work. Thirty-five million people in Africa are affected by trypanosomiasis annually.

● In domestic stock, the sickness is known as "nagana", which soon kills the beast if it is not treated. It becomes thinner, with mangy coat and wasted muscles. It is listless unable to pull a cart or plough. This affects agricultural efforts, and the cow does not produce milk, and is a poor carcass if slaughtered.

Some indigenous cattle have built up more resistance to the disease, but are often in poorer condition to start with, and so have little chance of recovery if they are bitten and infected.

Exotic cattle are highly susceptible but with better general health may survive a little longer. Death occurs between three weeks and three months after the animal has been bitten.

In a book called *The Bane of Africa*, Dr T. Nash comments that "the tsetse dictated that the economy of Africa should be based on the hoe and the head load". The presence of the fly limits the area that can be usefully occupied by man and his domestic animals, and in a land-hungry continent this constitutes a severe menace.

CAMPAIGN AGAINST FOOT-AND-MOUTH PROGRESSES

Harare THE HERALD in English 3 Mar 83 p 3

[Text]

AN estimated 100 000 cattle have been vaccinated against foot and mouth disease in the West Nicholson commercial farms and the adjoining communal areas, according to veterinary officials in Gwanda.

But the final figures of the number of cattle vaccinated will not be known until the end of this week, an assistant provincial veterinary officer, Dr Dennis Lampard, said yesterday.

He did not think the original target of 150 000 cattle would be reached because many cattle had been destocked.

"We are meeting with success. There have been no new outbreaks so far and things are going quite well," Dr Lampard said.

Most of the vaccinations had taken place at a Lemco ranch, but had spread to adjoining commercial ranches.

The vaccination programme had been easier on the commercial farms than in communal areas because many of the communal cattle were scattered in their search for grass. Vaccination had also been carried out in Siyoka and Mtetengwe communal lands, he said, adding that the turn-up of cattle in Mtetengwe had

not been as high as expected.

Dr Lampard attributed the outbreak of foot and mouth to buffaloes which are suspected to be carriers of the virus.

"We are not very sure yet about this," he said, adding that culling buffaloes may be part of the answer in dealing with the foot and mouth epidemic in the area.

Another control measure involves putting up a fence along the Gwanda-Beitbridge district boundary.

Yesterday an assistant veterinary provincial officer, Dr A. J. R. Taylor, said he hoped work would start on the fence next month.

Meanwhile, cattle sales in Gwanda will resume at the end of the month, but those in the Beitbridge district would remain suspended until further notice, Dr Lampard said.

It was realised that the communal farmers were eager to sell off some of their stock, but until the foot and mouth epidemic had been dealt with no cattle sales could take place.

BRIEFS

UK CAMELLIA BAN--New Plymouth (Press Assn)--Britain has re-opened its camellia market to New Zealand, but it has imposed far more stringent conditions on plants coming from New Zealand nurseries this year. The Ministry of Agriculture and Fisheries says the conditions are designed to overcome problems in Britain with the fungus glomerelia, which led to the British Ministry of Agriculture late last year banning sales in Britain of New Zealand camellias and some other plant species. The ban raised prospects of serious disruption to New Zealand's camellia trade with Britain this year. [Text] [Auckland THE NEW ZEALAND HERALD in English 2 Feb 83 p 16]

SPOTTED ALFALFA APHID--New Zealand's most recent unwanted insect import, the damaging spotted alfalfa aphid, has reappeared this summer. Dr R. P. Pottinger, leader of the insect control and organic chemistry group at the Ruakura Agricultural Research Centre, says that so far this summer the pest has been found on lucerne and white clover. Numbers are starting to increase and Dr B. H. Rohitha, of Ruakura, has insect traps at 12 sites in a triangular area between Auckland, Whakatane and Taupo, watching for further spread. The traps and crop inspections with the help of the advisory services division of the Ministry of Agriculture and Fisheries will monitor the flight and dispersal of the aphid in the northern North Island. Dr Rohitha has also instituted the damage assessment study and will be working with a scientific technical officer, Mr Ross Wrenn, to develop insecticidal controls for the aphid on lucerne--and also on white clover, if it proves necessary. [Excerpts] [Auckland THE NEW ZEALAND HERALD in English 4 Feb 83 p 10]

CSO: 5400/9102

PAKISTAN

BRIEFS

LOCUST BODY ELECTS PAKISTAN--Pakistan was elected Vice-Chairman for 1983-84 of the executive committee of the Commission for Controlling the Desert Locust in the Eastern Region of South-West Asia. The election took place at the 15th session of the commission which concluded at Rome last week, and which was participated by Dr Abdul Kafi, Joint Director (Technical) of the Department of Plant Protection of Pakistan. According to F.A.O. there is no danger of large scale locust breeding in the region during the next three months. Only limited breeding is likely to take place in spring breeding area of Southwest area region. There is also likelihood of movement of locust adult from Arabia peninsula to Iran, Pakistan and India during May and early June. [Karachi DAWN in English 1 Apr 83 p 15]

CSO: 5400/4717

PERU

BRIEFS

NEW INSECTICIDE AGAINST PHYLLOXERA--The days of the phylloxera are numbered. The grapevine pest will be eliminated in ICA. A Frenchman has discovered an effective means. Ica, 23 March--Spurred on by diligence and an inveterate great desire to do research, a French grapevine grower and wine maker, who has lived more than 55 years in Ica, says that he has discovered a chemical product of proven effectiveness against phylloxera, the fearful insect that ravages the Ica valleys. At last vineyards will be safe from the terrible pest that has caused so much damage, said Edmundo Borit (72), a native of Anjou (France). He declined to give further details concerning the name and components of the discovered product. Borit said that the good qualities and the effectiveness of the insecticide, not yet patented, will be made known to the officials and the specialists of the Ministry of Agriculture so that they may verify that it is a question of a method that will destroy the terrible insect that for many decades has been decimating the vines of the Ica valleys. The French wine maker and grapevine grower, who gives advice and directs the making of wines in a well-known Ica wine cellar, said that he started his research on a vineyard in Tonuz that was attacked by an insect with characteristics similar to those of the phylloxera. "The results were positive and I decided to apply the chemical preparation to vineyards that were attacked by the destructive phylloxera, and I attained the hoped-for outcome," said Borit. He said that he would ask the Ministry of Agriculture for the return of 10 of the 70 hectares that "the agrarian reform took from me," in order to plant grapevines and to convert them into a real field for the experimentation and research of vine cultivation, which must be recovered for the good of the economy of the department. [Text] [Lima LA PRENSA in Spanish 24 Mar 83 p 18] 8255

CSO: 5400/2065

PHILIPPINES

BRIEFS

NEW PLANT DISEASE--The Ministry of Agriculture (MA) disclosed yesterday that a new plant disease known as "bacterial streak" has surfaced in Mindanao, threatening to infest the country's cacao plantations and to thwart government's multi-cropping program. Assistant Agriculture secretary for crops Domingo Panganiban has ordered an all-out campaign to check the spread of infestation, before the plant disease can cause economic disaster to cacao growers nationwide. MA sources said the infestation threatens to affect the ₱12 million worth of cacao hybrid seedlings which are now being propagated for distribution to coconut farmers under the multi-cropping program. The bulk of the seedlings had been ordered earlier from private seed growers for immediate planting in coconut lands. Sources at the bureau of plant industry (BPI) said the infestation was first found out in a cacao plantation in Zamboanga. BPI crop protection chief Jesus Sumangil said a BPI team will immediately go to Zamboanga, Davao, Samar, and Leyte to study the possible regional distribution of the plant disease. [Manila BULLETIN TODAY in English 17 Mar 83 p 24]

CSO: 5400/4397

BANANA WEEVILS, NEMATODES CONTINUE TO DAMAGE KAGERA BANANAS

Dar es Salaam DAILY NEWS in English 17 Mar 83 p 4

[Article by Attilio Tagalile]

[Excerpt]

WHILE war against the banana stalk eating nematodes which have so far defied all scientific research continues, agricultural officers in Kagera region advise peasants to diversify their crops as one of the control measure.

THE effectiveness of the US-manufactured chemical, *Furadan*, for the eradication of both banana weevils and nematodes is no longer disputable after a series of empirical experiments on the chemical.

However, banana weevils and nematodes have continued to play havoc on banana plantations in the country, especially in Kagera region.

Not that the government does not care about it. Foreign exchange to import the chemical is not available.

To compound matters, *Furadan* unlike the banned

Dieldrin, is a very expensive chemical both to the government and the individual farmer. For three recommended applications, *Furadan* consumes 1,000/- per banana hectare.

Last year the government imported the chemical for use in Kagera region. However, the amount was insufficient and numerous hectares of banana which had been heavily affected by banana weevils and nematodes were as a result, abandoned.

The implication of this trend was that Kagera region residents had low banana yield, which in turn led to food shortage.

CSO: 5400/203

MINISTRY CONCERNED AT EXTENT OF GRAIN BORER INFESTATION

Extension Service Director's Statement

Dar es Salaam DAILY NEWS in English 17 Mar 83 p 3

[Article by Musa Lupatu]

[Excerpt] THE Ministry of Agriculture is making efforts to import chemicals to fight the larger grain borer otherwise known as (Dumuzi) "Scania" which has destroyed considerable amounts of grain in the country.

The Director of Extension and Technical Services in the Ministry, Ndugu Salum Khamis, said in Dar es Salaam yesterday that Japan and Italy had offered to finance the purchase of the chemicals.

He said the Ministry had advertised tenders for the supply

of actellic chemical, presently commended for control of the pest. It was not known how much the donor countries had offered to Tanzania nor when the chemicals would arrive.

He said the Ministry was concerned at the extent of the infestation by the grain borer. He did not quantify the extent of damage caused to farm produce, but added that two surveys conducted so far had shown that the infestation was serious.

Commenting on request by Kilosa District authorities to

quarantine the district as a result of serious infestation by the pest, Ndugu Khamisi said the request would not be granted because its application would be difficult.

He said quarantine essentially meant the restriction of grain movement in and out of the district, and if it was granted it would cause problems where there were food shortages.

Kilosa District authorities had written to the Ministry requesting for quarantine because of the pest infestation.

Kilosa District 'Seriously Affected'

Dar es Salaam DAILY NEWS in English 16 Mar 83 p 3

[Article by Musa Lupatu]

[Excerpt] KILOSA District has been seriously infested by the larger grain borer (*scania or dumuzi*) and authorities in the district have requested for chemicals and transport to fight the pest.

Agricultural and administrative officials said the infestation was widespread and could cause serious food shortage if measures were not taken immediately.

The District Agricultural Development Officer, Ndugu P. J. Kicheleri said a letter requesting for a quarantine in the district had been sent to the Ministry of Agriculture but they have not received any response.

The officials could not give the extent damage caused so far, but Ndugu Kicheleri said that 300 bags of maize at the Kimamba godown of the Tanzania Sisal

Authority (TSA) had been destroyed.

The advice to quarantine the district was given from the Arusha-based Tropical Pesticides Research Institute (TPRI) who visited the district.

The Plant Protection Ordinance, empowers the director responsible for crops in the Ministry of Agriculture as the only authority to impose such quarantine.

TANZANIA

BRIEFS

RODENTS DESTROY CULTIVATED MAIZE--Lindi--Hundreds of acres of Maize cultivated in Nachingwea District this season are feared to have been destroyed by rodents. Reports reaching Iringa said rodents had extensively damaged young plants, subsequently forcing peasants to abandon cultivating cereals and instead concentrate on the cultivation of cassava and simsim. The Nachingwea District Development Director, Ndugu Charles Ponela, said the division of agriculture in the district was investigating the matter. [Text] [Dar es Salaam DAILY NEWS in English 15 Mar 83 p 3]

TABORA REGION DAMAGE--More than 70 per cent of the maize crop cultivated in Tabora Region during this and last season has been destroyed by the Great Grain Borer, known as */Scania/* [in italics] According to reports from the meeting of the Regional Development Committee the grain borer had extensively damaged the maize crop that had been stored in godowns and that which had not been harvested. The committee was also informed that the grain destructive quelea quelea birds had destroyed millet, particularly in Igunga District. The Great Grain borer was first sighted in the country in Urambo District in 1981 where it was nicknamed */Scania/* [in italics] because residents thought it resembled the Scania vehicle. [Text] [Dar es Salaam DAILY NEWS in English 12 Mar 83 p 1]

CSO: 5400/203

VIETNAM

BRIEFS

RICE CROP DAMAGED--Due to the upset in crop cultivation patterns and because ricefields were not well aerated, and duckweed and phosphate and potash fertilizers were not sufficiently supplied, 5th-month spring rice has grown at an uneven rate and harmful insects and diseases, especially root suffocation and rice blast, have tended to break out and develop easily. At present, as many as 90,000 hectares of this rice in the northern provinces are being affected by root suffocation and rice blast diseases and brown planthoppers and other insects. [Excerpt] [BK101438 Hanoi Domestic Service in Vietnamese 2300 GMT 9 Apr 83]

CSO: 5400/4408

EFFORTS TO CONTROL MAIZE VIRUS DESCRIBED

Harare THE HERALD in English 11 Mar 83 p 10

[Text]

CROP scientists are intensifying efforts to unravel the mystery surrounding maize streak virus following an outbreak which has seriously damaged irrigated crops in parts of the southern half of the country.

Plottolders at Tuli Makwe Irrigation Scheme near Gwanda, Matabeleland, have been told to destroy their damaged crop, and farmers at Mapanzure Irrigation Scheme in Masvingo have reported serious damage.

Last November a Harare plant pathologist, Miss Lucia Johnstone, said conditions were now ideal for massive MSV outbreaks because winter-irrigated cereals had changed population dynamics of maize, streak vector.

MSV was first recorded in 1928 and re-appeared in 1951 with the expansion of irrigation projects.

The host is a leaf hopper called *cicadula mbila* which jumps from grass verges on to maize stands spreading the virus.

Attack results in broken, narrow yellow

lines along veins of leaves. This stunts plants, and cob formation may be stopped or greatly reduced depending on plant age at the time of attack.

Typical symptoms are often seen on grasses surrounding streak-infested maize.

The disease is said to be common where irrigation is used for growing green crops throughout the year, appears prevalent in stressed crops, and high incidence has been on lands with low pH.

A lecturer at the University of Zimbabwe, Dr Sam Muchena, says an integrated pest management scheme involving use of systematic chemicals should be developed, together with varieties showing in-built resistance.

There are maize strains less attractive to leaf hoppers even under normal field conditions, he adds. The hopper will leave them alone if there is an alternative strain.

On the other hand there are strains which, even when attacked, will go on

to yield. Dr Muchena says there should be more research in this variety because of its in-built resistance, rather than look to the one which will come under attack if there is no alternative.

A virologist at the Plant Protection and Research Institute, Cde Cephas Muzira, is carrying out MSV trials at Henderson Research Station. From previous trials he has compiled useful information on MSV effects on yields.

Plants attacked inside four weeks of germination will not grow to give a cob, he says. In general, losses from hybrid lines average 45 percent if attack is four weeks after germination.

Cde Muzira has since noticed that MSV is always in Mazowe where irrigated winter wheat always follows summer maize.

Timing of planting could have caused problems in Masvingo and Matabeleland as outbreaks could be severe in maize planted either too early or too late, he says.

Cde Muzira goes on to add that Nigerian lines said to have been resistant succumbed when tried in Zimbabwe, giving rise to the thinking that we possibly might be having a different type of virus.

Where inter-cropping has been practised, it has been seen that the virus can attack one crop and leave the other: rice inter-cropped with tobacco was attacked, as was the case with wheat inter-cropped with tobacco.

The latest edition of Farm Management Handbook recommends that affected Highveld producers should avoid early planting in mid-September; which is mid-November in the Lowveld.

A spray of 40 percent dimethoate at 50 ml in 455 ml of water should be applied on grass verges to control vectors; or carbofuran 10 percent granules in planting furrow at sowing.

Clearing 10 m of grass around the field reduces spread, as will clean cultivation.

BRIEFS

DDT SUBSTITUTE TESTED--Zimbabwe has become the world's first testing ground in the use of the chemical Deltamethrin as an alternative to DDT in malaria control programmes. The field trials in the use of Deltamethrin, a synthetic biodegradeable pyrethroid with no known insect resistance, are being held near Nyamapanda. Blair Research Laboratories staff have applied the insecticide to 3 500 houses. Initial tests show that although a weak Deltamethrin solution was used it has so far been totally effective. British entomologist Mr Peter Chadwick, of the Wellcome Foundation, was recently in Zimbabwe to discuss the use of Deltamethrin in the proposed experiment. Like many other countries, Zimbabwe up to now has relied on DDT to combat malaria. Scientists have pointed out, however, that although DDT is effective in malaria control it also has side effects on the environment. Some species of mosquito are known to have developed resistance to DDT and the new insecticide is said also to kill cockroaches and bed bugs, both of which are resistant to DDT. Dr Paul Taylor, of Blair Research Laboratories, believes that more than one insecticide should be used in malaria control programmes. He said this would reduce the chances of successive generations of mosquitoes becoming resistant to one insecticide. Because mosquitoes produce new generations every 10 days and each female lays about 100 eggs in three days, the chances of genetic resistance were high, he said. "If Deltamethrin can be introduced as an alternative or substitute to DDT for cost-effective malaria control, it will be of enormous help not only to Zimbabwe, but to the rest of the malaria affected areas of the world," he added. [Text] [Harare THE SUNDAY MAIL in English 3 Apr 83 p 1]

WEEVIL CONTROL--Weevil infestation at the country's three major maize depots may result in a 1 percent loss of stocks held there, the highest in Zimbabwe, the general manager of the Grain Marketing Board, Mr Bill Long, said in Harare yesterday. He said there was no country in the world that could handle bagged grain as efficiently. Some African countries, Mr Long said, lost as much as 25 percent to the weevil. "There is no country which can achieve such small losses as ours, but we still think it is too much for us." In spite of control measures, the weevil problem was "still not completely under control and nobody needs reminding that we shall require these stocks in the coming months to feed the nation." Worst hit were depots in Karoi, Bindura and Mhangura--the largest with 600 000 bags. Stocks had been piling at these depots over the past two years and the infestation was "very apparent."--ZIANA [Text] [Harare THE HERALD in English 29 Mar 83 p 4]